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ON

LOCAL ANÆSTHESIA IN UPPER ABDOMINAL SURGERY.

Delivered on Feb. 1st, 1929, before the Royal College of Surgeons of England

BY CHARLES A. PANNETT, M.D., B.SC. LOND.,

FELLOW OF THE COLLEGE; PROFESSOR OF SURGERY, UNIVERSITY OF LONDON; AND SURGEON TO ST. MARY'S HOSPITAL.

So magnificent was the boon conferred upon humanity by the discovery of general anæsthesia, so welcome the merciful oblivion to the patient and the untrammelling quietude of his body to the surgeon, so perfect and without danger have its methods become that it has been long accepted in England unchallenged as an almost ideal method for upper abdominal surgery. Yet, the operation completed, the aftermath is not invariably so satisfactory. There is an uncertainty about future events which is directly attributed to the inhalation of the anæsthetic. Damage to the parenchyma of the liver and kidneys, irritation of the lung endothelium, diminished oxygen-carrying capacity of the red blood corpuscles, the exhaustion from uncontrollable vomiting, the shock which comes on when the stimulation of the ether vapour is withdrawn, all tend to lessen the potential capacity for recovery of the patient, who must also run the risk of the inhalation of mucus and vomit during the unconscious period immediately succeeding the operation. It would be wrong to exaggerate these ill-effects of general anæsthesia, but it must be admitted by any impartial observer that the state of a man who has passed through an upper abdominal operation under local anæsthesia is very much better during the early post-operative period than that of him who has submitted to a general anæsthesia. This point need not be laboured. It is a simple demonstrable truth. Let us then turn to contemporarily available methods of local anæsthesia. They are: (1) local infiltration; (2) paravertebral anæsthesia; (3) splanchnic combined with anterior abdominal anæsthesia; and (4) spinal anæsthesia.

Successive local infiltration of structures before they are divided is not effective in abdominal operating so the choice lies between paravertebral, splanchnic, and spinal methods. They are all methods of conduction anæsthesia—that is, they attempt to abolish sensation over wide areas by interrupting nerve trunks. The difficulty is that the nerve-supply of the abdomen and its contents nowhere is limited in its path to a narrow area, such as prevails in the neck or upper limb. If a block of the nerves concerned is to be brought about outside the vertebral column, at least nine nerves on either side must be anæsthetised. This requires great skill on the part of the surgeon, occupies considerable time, and is a serious ordeal for the patient. I have devoted much time and labour in the attempt to perfect a reliable technique for paravertebral anæsthesia, but I have been driven to discard it as a practical solution of the problem. When it succeeds the anæsthesia is perfect, but if one nerve-root only eludes the needle the patient will retain pain sensation in some region of the operation area.

SPLANCHNIC ANÆSTHESIA.

Splanchnic anæsthesia, with which must be combined some method of anæsthetising the anterior abdominal wall, has been employed very widely abroad and quite extensively in this country. The splanchnic nerves pass through a comparatively narrow area where they traverse the diaphragm, and their block here abolishes sensation in the upper abdomen. An approach either from behind or, after opening the abdomen, from the front may be made. The posterior approach of Kappis has been used by some surgeons in this country, but always apparently in association with general anæsthesia, so that it is very difficult to say how successful it is. In one continental clinic where general anæsthesia is not added as routine it was stated that anæsthesia was successful in only 50 per cent. of cases. On the other hand, the anæsthetic fluid can be accurately placed where it is needed by the anterior route and the procedure is associated with less risk than the posterior method. Nevertheless, if no general anæsthesia is employed the technique of injection from the front is in itself painful and not always possible in the conscious patient. Though excellent anæsthesia by anterior abdominal block and anterior splanchnic block can be obtained, the method is not very well adapted to English patients, though circumstances may render it desirable, and a little general anæsthesia to allow of the splanchnic injection itself may make it possible.

I believe it better to avoid the administration of a general anæsthetic continuously throughout an operation under splanchnic anæsthesia, for I have received the impression that the post-operative course is no better than with pure general anæsthesia and lung complications seem to be quite as common. Splanchnic anæsthesia carried out as above is a valuable method which should be at the command of every surgeon. I have found it useful to modify Braun's original technique slightly. The vertebral column between the aorta and inferior vena cava is felt just above the pancreas with the pulp of the left index finger through the lesser omentum. The finger is kept close to the right side of the aorta, and the narrow tubular guide of the long fine needle is passed along its dorsum down to the vertebra and kept there by the middle finger. The needle is then passed down the guide as far as the bone, aspiration performed to prove the points of the needle not to be in a blood-vessel, and 30 c.cm. of 1 per cent. novocaine solution containing 20 drops of 1 in 1000 adrenalin per 100 c.cm. injected. Almost immediately the viscera fall back into the abdomen and render it quite easy to inject a further 10 c.cm. of the solution just to the left of the aorta behind the œsophagus. This injection is necessary to reach the left cœliac ganglion, for I have found, by trial with dyes in the dead body, that fluid injected only at the one point recommended by Braun sometimes fails to reach the left splanchnic nerves (Fig. 1).

SPINAL ANÆSTHESIA.

Leaving this method of anæsthesia, let us turn to the possibilities of spinal block, conduction anæsthesia carried as far back as is possible. Years ago spinal anæsthesia was used to a considerable extent, and Barker was able to show how high anæsthesia could be obtained by rendering the fluid used heavy enough to be able to control its position by altering that of the patient. But high anæsthesia by the technique then employed was found to be too dangerous and was given up so that, generally speaking, at the present time the spinal method is held to be suitable only for operations upon the lower part of the body. I hope to prove to you, however, that such high operations can be performed with safety and that there is a large field of usefulness for this anæsthetic method.

The problem in its simplest form is to bring an anæsthetic solution of sufficient strength in contact with the nerve-roots supplying the abdominal wall and the contained viscera—that is, roughly speaking, for upper abdominal work the roots of the sixth dorsal to the third lumbar nerves. The difficulty has always been to make a drug injected below the termination of the spinal cord diffuse up high enough to reach the fifth or sixth dorsal segment. There is one obvious and easy solution—namely, to inject the drug at that point of the spinal column where it is wanted. This practice has been indeed followed by a number of surgeons, but it is dangerous because of possible puncture of the cord and the production of a hæmatomyelia. The risk is one which should not be taken

where there is general anæsthesia as the safe alternative. For spinal anæsthesia puncture should always take place below the level of the lowest extremity of the spinal cord. It should not be higher than the interval between the second and third lumbar spines.

The Movement of Fluid in the Subarachnoid Space.

The question of the movement and final disposition of fluid injected is obviously intimately bound up with the natural flow of cerebro-spinal fluid about which we have not altogether precise knowledge. It seems to be well established that the fluid is secreted by the choroid plexuses of the lateral ventricles, flows through the foramina of Monro into the third ventricle, and thence by the aqueduct of Sylvius into the fourth ventricle. The foramina of Magendie and Luschka lead it into the subarachnoid space. The path of the fluid thence is not so clear. I quote from L. H. Weed [1]:—

"From cisternal dilatations of the subarachnoid space in the region of the cerebello-bulbar angle the cerebro-spinal fluid slowly seeps downwards in the spinal subarachnoid space, but passes more rapidly upward about the base of the brain and thence more slowly over the hemispheres. . . . In the spinal region there is also an almost equivalent passage of fluid upward."

H. Jackson [2] says that the fluid passes downwards along the posterior surface of the cord and upwards on the anterior aspect. A. Levinson [3] makes the same statement. Experimental demonstration of this fact, however, is far from conclusive, and I venture to affirm that no such circulation in the spinal canal does in reality take place. Wade himself injected into the lumbar region of the spinal canal potassium ferrocyanide and iron ammonium citrate in isotonic solution, and by acid fixation methods was able subsequently to find granules of Prussian blue in the whole spinal and basilar portions of the subarachnoid space which were "rapidly filled," whilst "the cerebral portion of the space was not completely injected until the experiment had been continued for several hours." But he injected the solution at a pressure of 130–180 mm. water, whilst the pressure of cerebro-spinal fluid in dogs is very constant and averages 112 mm. water, whilst that in cats averages 119 mm. water. It seems clear to me that he displaced the fluid in the spinal canal up into the cranial cavity until the venous pressure equalled the pressure of injection. His results could be explained in this way. In rabbits I performed the experiment (and repeated it) of injecting a few drops of a concentrated solution of methylene-blue under the arachnoid of the lumbar region of the cord after laminectomy, the animals being under the influence of urethane. After 45 minutes the animals were killed and the dye was found to have diffused only a few millimetres. There was no evidence at all of an active and vigorous circulation. It may be objected that in man after head injuries and sometimes after laminectomy large volumes of fluid escape in 24 hours. This large secretion may, however, very likely be an attempt to restore the cerebro-spinal pressure which is kept low by the leak in the dural sac, to its normal level, and therefore may have no bearing on the problem. If, as I believe, the absorption of normal fluid from the canal is only slight, necessitating little in the way of replacement, an anæsthetic injected into the dural sac would spread very slowly if it were dependent upon the physical process of diffusion alone. This is in agreement with the fact that 3 c.cm. of a 5 per cent. novocaine solution which is isotonic with cerebro-spinal fluid, injected between the third and fourth lumbar vertebræ, anæsthetises only that part of the body whose nerves pass downwards in the cauda equina.

An anæsthetic solution may be made to spread upwards above its point of introduction into the spinal canal (1) by altering the pressure conditions within the spinal canal before injecting; (2) by removing so much fluid and replacing it by an equal volume of anæsthetic solution; or (3) by making it either lighter or heavier than the cerebro-spinal fluid and altering the position of the patient.

FIG. 1.

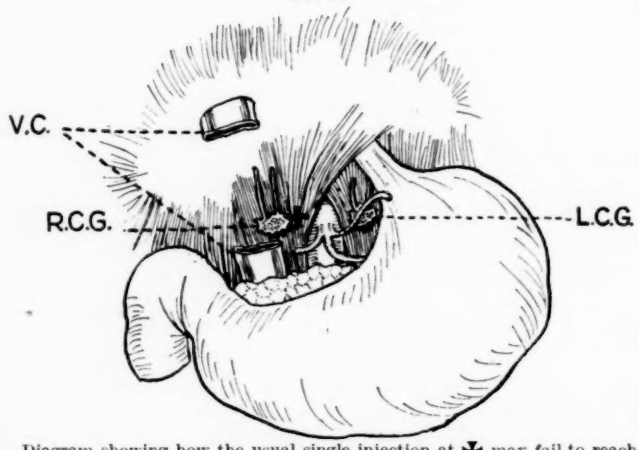


Diagram showing how the usual single injection at ✠ may fail to reach the left splanchnic nerves.

V.C. = Vena cava. R.C.G. and L.C.G. = Right and left cœliac ganglia, with the splanchnic nerves passing into them.

1. *The Reduction of Cerebro-spinal Pressure before Injection.*

This method was originally introduced by Le Filliâtre.[4] By removing definite volumes of cerebro-spinal fluid he was enabled to make the anæsthesia rise to any desired level and even to become general. The principle of the method is simple. The dural sac being enclosed in a rigid bony cavity, when fluid is withdrawn the space evacuated must be filled by increase of blood in the vessels in the intra- and extra-dural spaces. The veins in fact become engorged, and the intradural pressure is diminished to one-half if 30 c.cm. be withdrawn.[5] Weed showed that there is a great tendency to keep the pressure of the cerebro-spinal fluid constant hence, if after withdrawal a smaller quantity of anæsthetic solution be injected, this will be more or less sucked along the subarachnoid space or at least it will be easily forced along it by pressure upon the piston of the syringe. Le Filliâtre uses a 2 per cent. cocaine hydrochloride solution as he says novocaine does not diffuse so well, takes away 25–30 c.cm. fluid, and injects 2·5–3·0 c.cm. of the solution. He injects forcibly and so must use a needle of large bore and practises "barbotage"—i.e., he injects and sucks out and injects again several times. The smaller amount will give anæsthesia up to the mammary line, the larger amount will cause generalised anæsthesia. He reports 9947 cases with two deaths, neither of which appeared to him to be due to the method. He says that if no more than 0·05 g. be injected no harm will result; 4 per cent. of his operations have been upon the head, 8 per cent. on the thorax, and 43 per cent. on the abdomen. No complications beyond two cases of severe headache and 4 per cent. of slight headache have occurred. Other surgeons have tried this method and met with accidents, but amongst his adherents are Masini,[6] of Marseilles, and P. Delmas.[7]

[1] Physiological Reviews, 1922, ii., 171.
[2] Jour. Amer. Med. Assoc., 1922, lxxix., 1394.
[3] The Cerebro-spinal Fluid, 1923.

[4] Paris Chirurgical, 1923, xv., 95; Jour. de Méd. de Paris, 1920, xxxix., 317; La Presse médicale, 1928, xxxvi., 1320.
[5] R. Bloch: Presse médicale, 1921, xxix., 316.
[6] La Presse médicale, 1928, xxxvi., 1321.
[7] Ibid., 1918, xxvi., 137.

Delmas, V. Riche,[8] and Bloch have used Le Filliâtre's method with success, the anæsthetic agent being novocaine. It would seem to be worthy of further study, the chief objections to it being the use of a large bore needle which leaves a leaking hole in the dura and the necessity for extracting rather a large quantity of cerebro-spinal fluid.

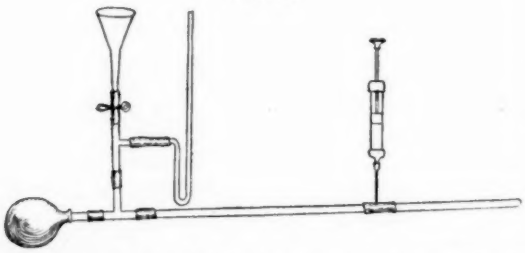
2. *The Replacement of Cerebro-spinal Fluid with Anæsthetic Solution.*

By dissecting out the cord in its membranes in an average-sized man I found that when distended the dural sac up to the level of the sixth cervical vertebra would hold 30 c.cm. of fluid. By an estimate which must necessarily be rather inexact let us suppose the sac up to the level of the fifth dorsal segment to contain 20 c.cm. of fluid, it might be possible to extract this volume and replace it by a solution which would then bathe the whole of cord which it is desired to anæsthetise. With this intent I aspirated 20 c.cm. of cerebro-spinal fluid from a patient with carcinoma of the œsophagus. The patient was then placed with the head low and 20 c.cm. of 0·5 per cent. novocaine solution (0·10 g. novocaine) which is much lighter than cerebro-spinal fluid, injected. The result was that sensation was delayed and dulled up to the clavicles but anæsthesia was not deep enough to allow the operation to take place. In another experiment 15 c.cm. of fluid were withdrawn and 12 c.cm. of 1 per cent. novocaine injected. The result was very similar. The strength of the novocaine was apparently not sufficient to soak into the nervous tissue. I have not had the opportunity to try the effect of using a 1·5 per cent. solution; this would mean using rather a large dose, but if the head were kept low the solution would in all probability remain round the lower half of the cord, for the specific gravity of it is only 1·0028 compared with 1·006 of the cerebro-spinal fluid. This method is worthy of further study.

3. *Use of a Heavy or Light Anæsthetic Solution.*

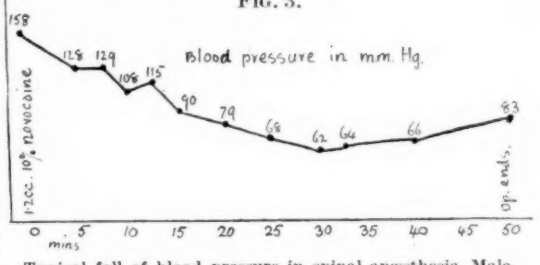
A solution much lighter than cerebro-spinal fluid will rise to the highest point of the spinal canal and a heavy fluid sink to the lowest level. The very careful work of A. E. Barker[9] in 1907 showed how a

FIG. 2.



heavy solution can be made to settle at the desired point in the spinal canal. Barker's heavy solution containing stovaine and glucose is still used but not often for high anæsthesia as Barker recommended. This is partly because stovaine is somewhat toxic and many operators have therefore given up its use. Novocaine, being considerably less toxic, is a preferable agent. A 10 per cent. solution has a specific gravity of 1·017. Tinged with a dye I have watched its behaviour when injected into the apparatus seen in the neighbouring sketch (Fig. 2). The glass tube represents the spinal canal and holds approximately the same volume as that. The balloon at the end represents the fluid in the cranial cavity; the pressure in the system can be varied by raising and lowering the funnel and is measured by the manometer; the coloured anæsthetic solution is injected by piercing the rubber connexion with the hypodermic needle of the syringe containing it. When the system was filled with a saline solution of the same specific gravity as cerebro-spinal fluid (1·006) and 1 c.cm. of coloured 10 per cent. novocaine injected with the tube sloped at an angle of 20 degrees with the horizontal, it was found that the anæsthetic solution settled down in a layer in the lower half of the tube and showed very little tendency to mix with saline solution. With this declivity it trickled down a distance equal to that between the third lumbar and fifth dorsal vertebræ (28 cm.) in 3¼–5 minutes. Alteration of the general pressure in the system by withdrawing fluid first did not seem to alter the rate of flow or tendency to diffusion in the least. These results cannot be applied without reserve to the

FIG. 3.



Typical fall of blood pressure in spinal anæsthesia. Male, aged 68. Carcinoma cæci. Ileo-transverse colostomy.

living body as the space between the cord and inner surface of the arachnoid is broken up by the anterior and posterior nerve-roots, the ligamenta denticulata, and a few other strands of arachnoid. These must obviously cause some obstruction to the flow of the anæsthetic fluid. It is essential to obtain anæsthesia that the novocaine solution should flow upwards behind the spinal cord in order to affect the posterior nerve-roots. When the amount of cerebro-spinal fluid is small and its pressure lower than normal, the head-down position may make so much of it flow out from the spinal canal into the cranial cavity that the cord may come to lie almost in contact with the membranes behind. Under such circumstances the solution deposited in the dural sac below the level of the cord may find it easier to flow upwards along its anterior surface, so that it may miss contact with the posterior roots or make irregular contact and so lead to imperfect anæsthesia. Some such explanation may account for failure where a good puncture has been made and the technique carefully followed out; in fact it has been suggested to me by the fact that it has seemed that anæsthesia has come on more quickly and extensively when the pressure of the cerebro-spinal fluid has been high than when it has been low.

Mention must be made here of a method of anæsthesia using a light solution developed by G. P. Pitkin[10] in America. Alcohol is added to lower the specific gravity and gliadin solution (prepared from starch) to render the liquid slightly viscid and inhibit the rate of diffusion. This author has also used a heavy solution of novocaine for obstetrical work.[11]

CHOICE OF ANÆSTHETIC AGENT.

Novocaine, being the least toxic of known local anæsthetics, would seem to be the best drug to use, but the objections have been raised that it is less certain in its action than cocaine or stovaine whilst muscular relaxation is not so complete. Both these facts are true. Novocaine seems to act more powerfully upon sensory than motor nerves. This can be demonstrated clearly by dissecting out the two sciatic nerves in a decerebrate frog, and painting that on the left side with 2 per cent. novocaine solution. On stimulating the middle of the painted area a contraction of the left limb occurred but no reflex contraction of the right limb. That the reflex path was not blocked was shown by stimulating the unpainted right sciatic when movements of both the hind limbs

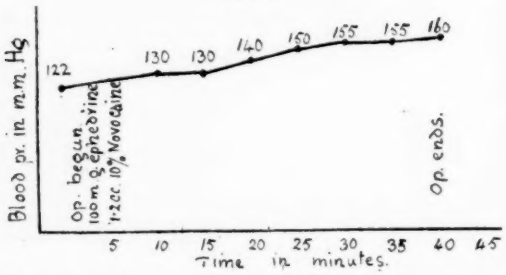
[8] Ibid., 1919, xxvii., 225. [9] Brit. Med. Jour., 1907, i., 665.

[10] Jour. of Med. Soc. of New Jersey, 1927.

[11] G. Pitkin and F. C. McCormack: Surg. Gyn. and Obstet., 1928, xlvii., 713.

occurred. Quite clearly, therefore, both excitability and conductivity of the motor fibres was retained in the painted nerve, whilst the sensory fibres were blocked. The muscular rigidity under novocaine spinal anæsthesia of which some surgeons complain is due to the fact that the anæsthesia did not extend high enough to block the splanchnic sensory supply. Under these circumstances pulling on the viscera will reflexly cause the abdominal musculature to contract. I have often demonstrated this, and I have observed several times whilst sewing up a laparotomy wound quite painlessly that the patient has been able to move his toes. This effect with a heavy solution may also partly be due to the fluid running up along the posterior part of the canal so that the motor roots are not so freely bathed with it. The question

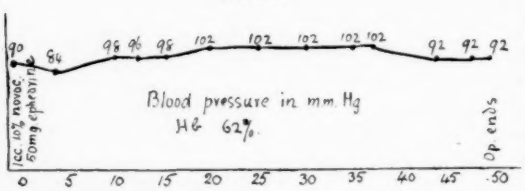
FIG. 4.



Effect of ephedrine on blood pressure in spinal anæsthesia. Carcinoma of stomach; exploration of abdomen.

arises whether adrenalin should be added to the novocaine or not. I rather feel with Barker that adrenalin, owing to the vascular spasm it produces, may do harm to the delicate nervous tissue, and there is some evidence to support this.[12] H. Hilarowiez and M. Szajna [13] assert that potassium chloride helps the penetration of novocaine and being a stimulant to nerve tissue lowers its toxicity. I have tried the addition of 1·1 per cent. KCl to the 10 per cent. novocaine, but have been unable to confirm their claims. Whether the viscosity of gliadin used by Pitkin lessens the rapidity of absorption of the novocaine into the veins and lymphatics, I do not know, but I believe it to be true that raising the blood pressure by the injection of ephedrine at the

FIG. 5.

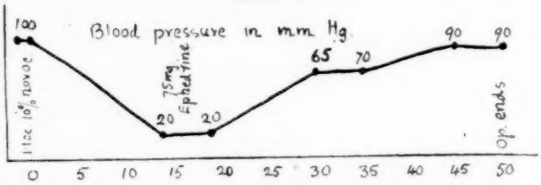


Spinal anæsthesia in low blood pressure. Effect of ephedrine. Blood pressure maintained. Male, aged 42. Duodenal ulcer. Gastro-jejunostomy.

same time as the spinal injection leads to rapid absorption of the drug and diminishes the anæsthetic effect. Further investigation of this point is clearly necessary.

I do not give morphine or scopolamine before the operation. The latter is a dangerous drug of uncertain action, but I have of late given sodium veronal the night before and the morning of the operation. Agda Hofvendahl [14] and A. L. Tatum and K. H. Collins [15] have brought forward evidence showing that in the rabbit, dog, and monkey the convulsions of acute cocaine poisoning can be cut short and the animals recover from an otherwise fatal dose if sodium veronal be injected intravenously. Veronal also seems to act prophylactically. Although deaths from spinal anæsthesia do not usually seem to be due to a direct toxic action it seems to be a harmless and further

FIG. 6.



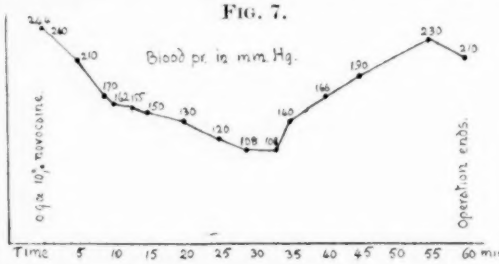
Great fall in blood pressure in spinal anæsthesia. Circulation well maintained in head-down position. Female, aged 30. Gall-stones; choledochostomy and cholecystostomy.

precaution to give preliminary sodium veronal medication.

DANGERS AND DISADVANTAGES OF SPINAL ANÆSTHESIA.

The crucial question of the risk of the anæsthetic must be faced and answered. If we restrict our investigations to death from novocaine spinal anæsthesia there are very few to be found in the literature, but it is likely that only a small percentage of such deaths are reported. As this applies equally to general anæsthesia, it is fair to compare the statistics of the two methods. The best collected series have been published by E. A. Rygh and D. H. Bessesen.[16] Amongst 250,895 administrations by 31 surgeons there were 75 deaths—i.e., 1 in 3345. They were

FIG. 7.



Spinal anæsthesia in high blood pressure. Female, aged 58. Carcinoma of stomach. Gastrectomy.

able to make an interesting analysis of 29 of these deaths of which some clinical data were given.

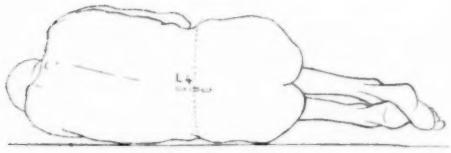
The causal relation of the spinal anæsthetic to the death of the patient was not by any means clear in all these patients. There were, in fact, only four cases which could be accurately ascribed to the anæsthetic agent and in none of these was novocaine used. Taking a corrected mortality-rate from the statistics which contained these deaths and leaving out all others there were 44,241 administrations with four deaths due to anæsthesia; mortality-rate 1 in 11,060. The mortality-rate of ether anæsthesia is calculated by Neuber as 1 in 5930.

There is more danger if the anæsthesia is made to extend up the cord than when it is only used for operations upon the pelvis and legs. If it reaches up to the fifth dorsal segment, as it must for upper abdominal operations, there is splanchnic dilatation and great fall of blood pressure which may be so low that the medullary centres are not kept oxygenated. The remedy for this is the head-down position; the injection of adrenalin which has only a short action, or better the administration of ephedrine. This last drug I believe to be of the greatest use. It causes peripheral vaso-constriction and keeps up the general blood pressure in spite of the block of the vaso-constriction fibres in the splanchnic nerves. A comparison of a typical blood pressure chart (Fig. 3), where no ephedrine was used with the two charts (Figs. 4 and 5), where this drug was administered soon after the spinal

[12] M. Franke: Deut. Zeit. f. Chir., 1927, ccii., 262.
[13] Zentrbl. f. Chir., 1928., lv., 1930.
[14] Monatschr. f. Ohrenheilk., 1921, lv., 887.
[15] Arch. Int. Med., 1926, xxxviii., 405.
[16] Minnesota Med., 1928, xi., 744.

injection, shows how the dreaded drop in blood pressure can be completely avoided. Because of the fall in blood pressure hæmorrhage or shock are held

FIG. 8.



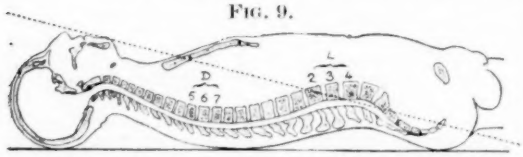
Position for injection.

to be important contra-indications to spinal anæsthesia. Desplas and P. Miller,[17] however, relate some extraordinary cases of severe shock which were operated upon under spinal anæsthesia with success, and the following case makes me wonder whether spinal anæsthesia cannot be used with advantage in cases of hæmorrhage, especially now that ephedrine is available, a drug which I had not at my disposal when I operated upon this patient.

A woman of 47 had been in hospital two years before for hæmatemesis.

March 24th, 1928: Readmitted for hæmatemesis; alleged to have brought up 2 pints the evening before. April 2nd: In spite of Lenhartz diet brought up 1 pint pure blood in morning and 1 pint blood and gastric contents in afternoon. 4th: Another pint of blood brought up; pulse 120. 5th: Surgeon consulted; pulse 116, but fell to 110 before operation; small wave; very severe anæmia, 40 per cent. hæmoglobin. Operation, using 1 c.cm. of 10 per cent. novocaine intraspinally. There was no serious collapse

FIG. 9.



The dotted line represents the horizontal when the body is in the 20° head-down position. Note the relative directions of the spinal curves in this position.

and the anæsthesia extended right up to the upper abdomen. No chronic ulcer was found. The patient recovered in spite of this needless operation.

On another occasion a woman of 51, very toxic, wasted from a growth of the sigmoid colon, had only 44 per cent. Hb. The usual technique with the head-down position for anæsthesia was employed. She went through the resection operation without giving any anxiety. The blood pressure fell from 120 mm. Hg at the beginning of the operation to 84 mm. Hg its lowest point 27 minutes later. The pulse was 108 before operation, 112 at the end.

That the method can be employed when the blood pressure is low on occasion the following case shows:—

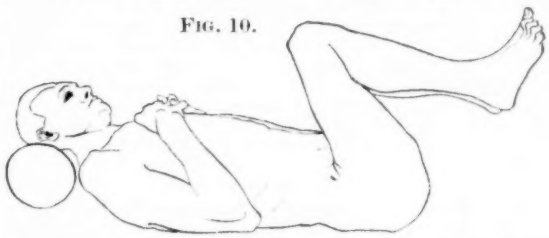
A man of 42 had recurrent symptoms of indigestion and pain four years after a Billroth 1 operation. One month before he was said to have had a hæmatemesis, and on his visit to the hospital he actually had one in the out-patient department. Hb. 62 per cent.; blood pressure 90 mm. Hg. Injection of 1 c.cm. 10 per cent. novocaine hydrochloride intraspinally with 50 mg. ephedrine subcutaneously. Good upper abdominal anæsthesia. Many adhesions found around site of old anastomosis fixing it to liver and gall-bladder. Anterior gastro-jejunostomy performed. Blood pressure never fell below 84 mm. Hg (see Fig. 5).

How great a fall of blood pressure can be withstood without danger to life I am not able to say. I have seen very great diminution of blood pressure, and the patient, although looking pale and having a very weak wrist pulse, expressed himself as being comfortable. Thus a man who was having his prostate removed suffered a drop in blood pressure from 160 to 68. Another patient, a woman of 30, with a blood pressure of 100 mm. Hg, was operated upon for gall-stones under high spinal anæsthesia. Her blood pressure of 100 fell in 15 minutes to the extraordinary low figure of 20 when ephedrine was given (Fig. 6). No alarm was felt for her safety. She was conscious, answered questions, and showed no signs of collapse.

Whether a high blood pressure is a contra-indication or not is also uncertain. A woman with a blood pressure of 240 mm. Hg had a gastrectomy for carcinoma performed. Her blood pressure fell to 120 mm. Hg. There was no anxiety about her condition felt (Fig. 7). The greatest depression lasts for only a short time when the pressure begins to rise again. The organism seems quite capable of functioning for a short time with a very low general blood pressure, the head-down position helping to maintain a sufficient circulation through the brain. It is possible, however, that too great a risk is run in the case of very old people with high spinal anæsthesia, for accommodation of the state of their vessels is not so easy.

Another contra-indication to spinal anæsthesia is said to be deep jaundice. I cannot support this

FIG. 10.



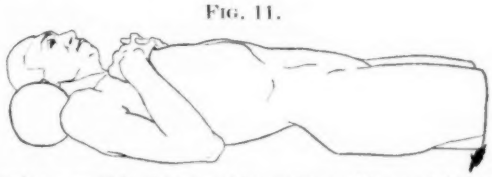
Showing obliteration of lumbar curve; the first position after injection.

contention; all the available evidence tends to show that spinal novocaine has less toxic effect upon the liver than general anæsthesia. I was once forced, because of a serious lung affection, to operate under spinal anæsthesia upon an intensely jaundiced woman who had had an obstruction of the common duct for some weeks. It was a complete success.

An important contra-indication to spinal anæsthesia would seem to be septicæmia, in which lumbar puncture itself is liable to be followed by the determination of the organism to the spinal canal.

Of paralyses of the sphincters, lower limbs, and cranial nerves after spinal anæsthesia it is difficult to find reliable information. C. Lepoutre[18] and P. Bazy[19] both relate single cases where some sphincteric trouble remained permanently after spinal anæsthesia. But no details of the operation are given except that they were hernias and no mention of the site of puncture, drug used, or dose. Stovaine is

FIG. 11.



Showing normal lumbar curve in supine position and how the anæsthetic fluid may trickle into the sacral part of the dural sac.

more toxic than novocaine, and it is inviting trouble to make a puncture above the lower end of the cord. There are, however, two cases of permanent paralysis after novocaine anæsthesia reported in the literature by M. Franke.[20]

(1) A varicose vein operation was done after the injection of 4 c.cm. of 5 per cent. novocaine-adrenalin solution. The patient died from pulmonary embolism on the sixth day, having had symptoms of myelitis. Post-mortem swelling of the cord and hæmorrhages up to the medulla were found. (2) After a similar operation the patient had symptoms of acute myelitis followed by paralysis of the legs, bladder, and rectum for two years. The tablets used were analysed and the adrenalin found to be decomposed.

[17] Presse médicale, 1918, xxvi., 234.

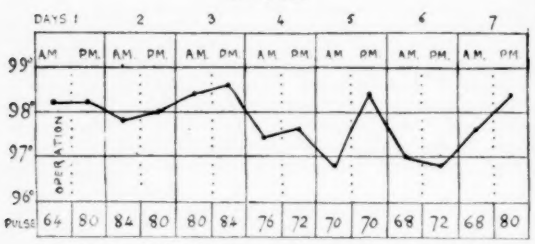
[18] Bull. et Mém. Soc. Nat. de Chir., 1927, liii., 456.
[19] Ibid., p. 243.
[20] Deut. Zeit. f. Chir., 1927, ccii., 262.

In 1906 Lieble, of Heidelberg, found such products of the decomposition of adrenalin to be irritating. Probably this is what caused the damage. Even pure adrenalin may be harmful as Barker pointed out (see above). It seems clear that adrenalin should not be employed in the spinal canal. Sometimes slight and evanescent meningeal symptoms appear after spinal anæsthesia. They may result from an irritation of the very sensitive membranes, for different observers have found a little increase of albumin, of the number of cells, of the sugar-reducing substance in the subsequently withdrawn cerebro-spinal fluid. Such symptoms never persist long. More serious are the ocular paralyses which sometimes come on after spinal anæsthesia. J. Rollet [21] has written a good account of them. He says the frequency is about 1 in 300 cases, but Bérard had only 2 in 3000 cases and Ducuing only 1 in 6000 cases. The abducent nerve is the one affected in 90 per cent. of cases. With cocaine it is very rarely seen; adrenalin seems to increase the danger. Mild meningeal symptoms are present for 10 or 12 days before the paralysis appears. It may last for from two to three days to four months. Recovery is the rule. Franke quotes Adam as having observed abducens paralysis after a simple lumbar puncture. The cause of these paralyses is thought to be a mild meningitis.

TECHNIQUE.

The patient is given sodium veronal 0·5 g. the night before the operation and 0·5 g. one hour before. The injection is made in the space between L. 2 and L. 3, or L. 3 and L. 4, in the middle line with a fine needle (1 mm. in diameter), the patient lying on his left side (Fig. 8). Cerebro-spinal fluid is not allowed to escape beyond a few drops and 1·0 to 1·2 c.cm. of 10 per cent. novocaine slowly injected. Immediately the patient is turned on his back and his legs flexed as in Fig. 10. If this were not done the solution might flow down into the sacral region, as can easily be seen from Fig. 11 drawn from Braun's plates and Fig. 9. At the same time the head end of the table is lowered

FIG. 12.



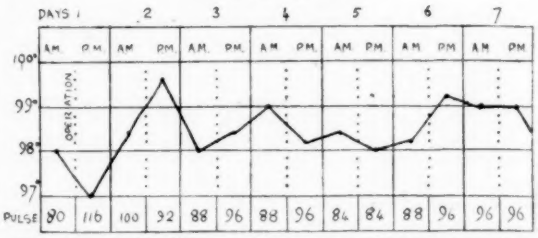
Female, aged 58. Carcinoma of stomach. Gastrectomy.

so as to make an angle of about 15 degrees with the horizontal, that the heavy solution may trickle towards the dorsal region. The legs of the patient are then lowered on to the table and the knees flexed over a pillow. There is no danger at all of the solution flowing up too high and causing dangerous paralysis. There are large margins of safety in the small size and small dose of novocaine solution and in the fact that the anæsthetic is quickly diminished in strength as it trickles upwards, partly because it becomes fixed by the nerve-roots, partly because of the rapid absorption which takes place from the spinal canal. The operation can usually be begun in about 8–10 minutes.

A great fall of blood pressure can be combated by the injection of ephedrine (0·05–0·1 g.). It is a little difficult to choose the right time to administer this. If given at the same time as the spinal injection a great and abnormal stimulus seems to be given to the circulation and the drug absorbed into the blood-vessels of the spinal canal before it has had good opportunity to soak into the nerves. It is probably better to wait until the blood pressure has fallen considerably, denoting that the anæsthetic has reached a fairly high level before giving the ephedrine, it being borne in mind always that absorption from the subcutaneous tissue in a collapsed patient is very poor.

Rarely quite unaccountably, although a good puncture has been made, the anæsthesia fails almost completely, or it does not reach high enough, or is evanescent in action. Failure to reach a proper level seems to be due to insufficiency of cerebro-spinal fluid denoted by low cerebro-spinal pressure and slow flow of the fluid from the needle

FIG. 13.



Female, aged 45. Hour-glass stomach. Billroth I. operation.

on puncture. Under such circumstances there is very little space between the cord and its membranes; indeed, in the dorsal position these structures may actually be in contact. There is a mechanical obstacle to the flow upwards of the anæsthetic solution behind the cord and between the maze of posterior roots. There is nothing else to do but resort to general anæsthesia. As the quantity of cerebro-spinal fluid, when the pressure of it is low, can be increased by intra-intestinal administration of saline solution,[22] preliminary proctoclysis might prove of value and avert such failures.

A serious drawback to high spinal anæsthesia is the limited time during which it works. Sensation is lost last, and disappears first at the highest level reached, so that it may be returning at the site of operation 45–50 minutes after the first incision was made. The time allowed is quite sufficient for a gastro-enterostomy or cholecystectomy, but is not always sufficient for a long gastrectomy. Under such circumstances I have been obliged to employ some general anæsthesia to complete the operation, but a plan has occurred to me which I have not yet put to the test. It is to finish the operation under anterior splanchnic block and local novocaine infiltration of the margins of the wound. At the stage at which such assistance is required the stomach and duodenum would be already cut across and the pancreas freely exposed to view. The splanchnic injection could be given with great nicety.

CONCLUSION.

High spinal anæsthesia, if a careful technique be followed, is accompanied by very little risk. It possesses many advantages over general anæsthesia, reducing to a minimum shock and post-anæsthetic disturbance. (Vide Figs. 12 and 13.)

It is not recommended that in the present stage of development it should be adopted as the routine method. A more perfect technique no doubt can and will be developed. As it is, it has reached a stage so satisfactory that certain operations become possible which otherwise would be fraught with great risk if performed under ether. It could certainly be used more frequently for upper abdominal work with advantage. Neither the technique recommended nor the views expressed in this paper have reached finality. The method seems to me to be in process of evolution. I have brought forward such facts as have come under my notice with the object of stimulating investigation and research in a very valuable surgical method.

[21] Jour. de Méd. de Lyon, 1928, ix., 167.

[22] F. E. B. Foley and T. J. Putnam: Amer. Jour. Physiol., 1920, liii., 464.

THE BLOOD-PLATELETS IN SPLENIC ANÆMIA,

WITH SPECIAL REFERENCE TO TREATMENT BY SPLENECTOMY.*

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Splenic anæmia, of the type often associated with the name of Banti, is a condition or group of conditions the pathogenesis of which is still quite obscure. In the original descriptions it is obvious that the term was used to include a number of specific conditions which have since been separated, such as syphilis, malaria, cirrhosis of the liver, aleukæmic leukæmia, and kala-azar (infantile splenic anæmia). The clear distinction of acholuric jaundice and the splenomegalies of the Gaucher, Niemann, and hypercholesterinæmic types still further encroach on the territory of "splenic anæmia." In the residue of cases after the exclusion of the above-mentioned groups the splenomegaly has been thought to be "primary" because of (*a*) the early appearance of the splenic tumour, (*b*) the appearance of fibrosis earlier in the spleen than in the liver, (*c*) the beneficial effects of splenectomy in many cases. Perhaps the best summarised description of the syndrome is that given by Tidy.[1]

> "A chronic disease of unknown origin, characterised by enlargement of the spleen without enlargement of the lymphatic glands, by anæmia, recurrent hæmorrhages, and, in the later stages of certain cases, cirrhosis of the liver. Further, the group is akin to various other groups—e.g., to some of the liver and spleen diseases with varying degrees of icterus and hæmorrhages, and to some manifestations of the hæmorrhagic diathesis. Certain definite factors can produce indistinguishable syndromes—e.g., syphilis, thrombosis of the portal and splenic veins."

No definite infective agent has been constantly found, although Gibson [2] has described the isolation of a streptothrix from certain cases. It is possible that several ætiological factors still remain to be distinguished. The two chief theories of causation are:—

1. A primary inflammatory sclerosis of the spleen, ascribed, in the absence of any proved organismal agent, to a fibrogenic toxin (Moschowitz [3]). This supposes that the splenic sclerosis leads to increased blood destruction.

2. Primary vascular derangement. This was suggested by the frequent association—be it cause or effect—of thrombophlebitis of the splenic and portal veins. It is known that the congenital abnormality of persistence of the umbilical vein may cause a similar picture, suggesting that purely vascular disturbances can produce the syndrome. (Eppinger [4] has described two cases of this condition and mentions those of Cruveilhier, Baumgarten, Masura, Benque.) The present paper, however, limits itself to a consideration of thrombosis and hæmorrhage, and attempts to evaluate the importance of the blood-platelets in connexion with these two features, especially after splenectomy, which is admittedly the only effective treatment.

1. *Hæmorrhage.*

The best-recognised type of hæmorrhage in splenic anæmia is hæmatemesis, which occurs in a large number of cases, and may be massive and recurrent. It is ascribed to kinking of engorged vasa brevia or to dilated œsophageal varices. There is no doubt that in many cases this mechanical explanation is adequate. While hæmatemesis is frequent hæmorrhages from other sites are described, such as epistaxis, bleeding gums, hæmaturia, menorrhagia, hæmorrhages from the bowel, and even purpura. As long ago as 1914 Ziegler [5] suggested an associated hæmorrhagic diathesis, and since then the association of a diminished platelet count has been mentioned by Eppinger, Frank, and Rosenthal.[6] Eppinger [4] refers to a case of "fibro-adenie" with diminution of the platelets and purpura. Frank,[7] referring to the condition as "aleukia splenica," speaks of five cases of "splenopathie mit hypoleukie und thrombopenie." It is interesting to note that in 1921 so acute an observer as Moynihan [8] doubted that the mechanical explanation was sufficient entirely to explain the hæmatemesis, and suggested the possibility of a toxic origin. Thus hæmorrhage may be ascribed to (*a*) a local mechanical factor, and (*b*) a general hæmorrhagic tendency.

2. *Thrombosis.*

Thrombophlebitis of the splenic and portal veins, with sclerosis and sometimes calcification of the vessel wall, has been very frequently described since its demonstration in 1904 by Dock and Warthin.[9] It is uncertain whether the thrombosis or the splenomegaly is primary, or whether both processes may be produced contemporaneously by the same agency. Continental authors, notably Cauchois [10] and Eppinger, maintain that the thrombophlebitic changes are primary in the majority of the cases; Eppinger in particular would distinguish a "thrombophlebitic splenomegaly" differing both clinically and pathologically from Banti's splenomegaly. Clinically he describes splenomegaly, secondary anæmia, tendency to hæmorrhage, with a definite ætiological factor such as trauma, or childbirth, with ascites as a subsidiary aid to the diagnosis. He admits, however, that this description is not pathognomonic. Pathologically his account of the "thrombophlebitic" spleen is practically identical with that of the "Banti" spleen, the only differences being that in the former the thrombosis of the splenic and portal veins is more prominent, while the liver shows fatty but not cirrhotic changes. Kaznelson [11] insists that the thrombophlebitic splenomegaly can be diagnosed with certainty during life. He regards splenectomy as contra-indicated, partly because he regards the splenomegaly as secondary and partly because in four out of six cases described by Eppinger splenectomy did not in any way check the course of the disease. He also describes the case of a woman who, five years after splenectomy, died with thrombosis of both femoral veins, portal thrombosis, and ascites. He states that the platelets were numerous. The view usually held in this country is expressed in Tidy's summary that the syndrome produced by splenic and portal thrombosis is indistinguishable from the Banti syndrome. It is interesting to note that at any rate Kaznelson recognises (*a*) that there is a type of splenomegaly with a special tendency to thrombosis, and (*b*) that he regards splenectomy as inadvisable in these cases.

Recently attention has been called by the Mayo Clinic to portal and mesenteric thrombosis as a very fatal post-operative complication of splenic anæmia. W. J. Mayo [12] states that of the 10 per cent. of patients who died in hospital after splenectomy the majority died from progressive thrombophlebitis extending from the splenic pedicle into the portal system.

Wilkins,[13] investigating embolism and thrombosis in the portal system, comes to the following conclusion:—

> "Splenic thrombosis usually results from splenectomy for splenic anæmia, by propagation of the normal process of thrombosis from the ligated end of the splenic vein. Thrombosis of the superior mesenteric vein usually results from retrograde extension of portal or splenic thrombosis, giving rise to mesenteric infarction. Splenectomy is the only type of operation which predisposes to mesenteric thrombosis, the factors being stasis from splenomegaly, cirrhosis, dilatation, and tortuosity of the splenic vein with degenerative changes in its walls, hæmorrhage from separating adhesions, trauma attending the removal of the enlarged spleen, ligation of the splenic vein, and finally infection, which is probably always present in the disorganised spleen and in the degenerated wall of the splenic vein in splenic anæmia."

The present communication owes its inception to a remarkable paper by Rosenthal [6] in which the importance of the blood-platelets in these two opposite conditions of thrombosis and hæmorrhage was first emphasised. He described a series of 16 cases of splenic

* A paper read before the Association of British Physicians.

anæmia splenectomised between the years 1909 and 1924. His description of the cases is as follows:—

"All these patients had splenomegaly, secondary anæmia, and leucopenia, and complained mainly of weakness, repeated gastric hæmorrhages, less often of nasal hæmorrhages, generalised bleeding (purpura), and pain in the left upper quadrant of the abdomen. Cases of syphilis, malaria, tuberculosis, leucopenic leukæmia, and cirrhosis of the liver were excluded from this group."

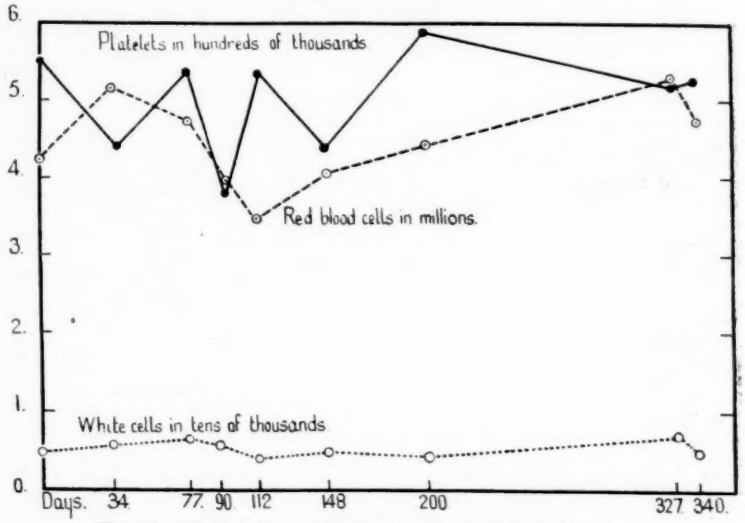
The operative results from the group of 16 cases showed 10 successes, 3 for as long as ten years, 1 for nine years. There were 6 failures with 3 deaths in the first year from widespread portal thrombosis. Three cases remained unimproved with repeated mesenteric and other thromboses. The last nine cases were studied in detail, especially on the platelet count before and after operation. On this basis he divided them into two groups:—

(*a*) *Thrombocytopenic Group* (five cases).—The platelets were very low before operation. After operation they rose for a short time and then fell to normal or slightly above. (In one case nine years after operation the count was 350,000.) In these patients the hæmorrhages were marked and were not always from the stomach (e.g., hæmorrhages from gums, epistaxis, hæmaturia, purpura). Rosenthal states that most of these patients had slightly prolonged bleeding time and in some cases poor retraction of the clot.

(*b*) *Thrombocythæmic Group* (four cases).—Platelets normal or somewhat subnormal before splenectomy, but afterwards rose rapidly to high levels (1,000,000+) persistently maintained for months and years. One case died from mesenteric thrombosis and three remained unimproved after suffering from thromboses in various sites—e.g., mesenteric, brachial, jugular, and femoral veins. In this group hæmorrhagic symptoms were less marked, and one of the cases gave no history of hæmorrhage before operation. In a few cases of apparent Banti's disease not splenectomised he observed "platelet crises" or marked temporary elevations which he thinks may produce thrombosis in the portal system before splenectomy. From these observations Rosenthal goes so far as to regard the two groups as ætiologically distinct. In the thrombocytopenic group he considers the splenomegaly to be primary, on account of the good results of splenectomy which he ascribes partly to the removal of a thrombocytolytic factor and partly to the mechanical relief of engorged abdominal veins and viscera. The suggestion here is that either the primarily diseased spleen is overactive in destroying platelets produced in normal numbers or that it inhibits production. In the thrombocythæmic group he thinks that the primary factor is an increased production of platelets, comparable to the increase of leucocytes in leukæmia, and that the splenic enlargement is secondary and represents an attempt to keep down the numbers of the circulating platelets—assuming that the spleen is the main platelet-destroying agency. After splenectomy fatal thrombosis may occur before the rest of the reticulo-endothelial system becomes adequate to deal with the increased number of platelets. Rosenthal does not correlate his "thrombocythæmic group" with the "thrombophlebitic" type, and states that they did not correspond with Eppinger's thrombophlebitic type.

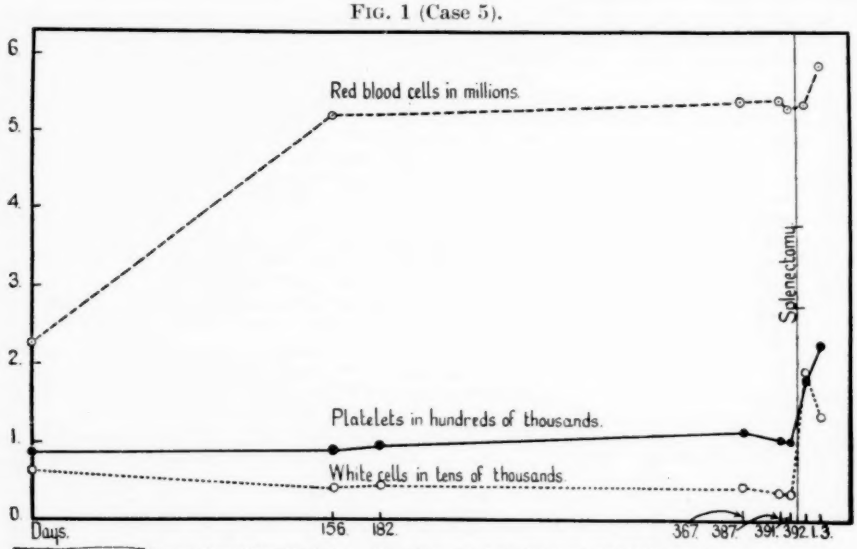
While his interpretation may be open to discussion, his paper is especially important because it is the first serious study of the platelets during life in splenic anæmia, and because it attempts to correlate the increase of the platelets with the tendency to thrombosis.

FIG. 2 (Case 15).



Thrombocythæmic type. Showing persistently high platelet count.

FIG. 1 (Case 5).



Thrombocythæmic type. Showing persistently low platelet count.

Since reading Rosenthal's paper I have had the opportunity of observing 19 cases of splenomegaly with anæmia which may fairly be described as "splenic anæmia" from the following criteria.

1. Anæmia with little evidence of regeneration (no increase of reticulocytes and nucleated forms) except in immediate post-hæmorrhagic regeneration.
2. Leucopenia as a rule—never leucocytosis.
3. Absence of clear evidence of hæmolysis—i.e., van den Bergh reaction normal; fragility normal; the only possible evidence of hæmolysis being increased output of urobilin.
4. Wassermann negative.
5. No other obvious cause.

In addition to these 19 cases three apparently similar cases were found to have a strongly positive Wassermann reaction—a high proportion, emphasising the importance of excluding syphilis. In nine of the cases only a single routine observation was made, but in the others a number of records were taken. The platelets were counted by an indirect method, modified from that described by Bedson,[14] which gives an average count of about 300,000 for a large number of normal persons. It will be seen from the table that on the platelet count the cases fall into three groups.

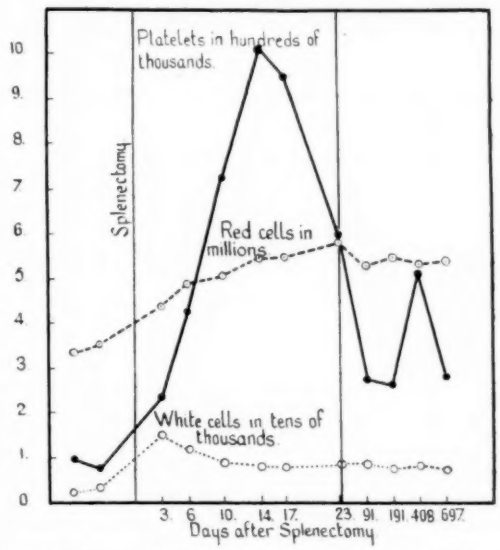
Group 1 (*Cases 1–9*), corresponding to Rosenthal's thrombocytopenic type. The platelets are markedly reduced, most of the counts falling round about 100,000, the lowest count being 53,000 in Case 9. Leucopenia was also definite. All these cases gave evidence of hæmorrhagic tendency; four had repeated hæmatemesis, epistaxis occurred in five cases, bleeding gums in three, purpura in three, menorrhagia in two. As a general rule there was moderate prolongation of the bleeding time and the clots retracted poorly.

That the thrombocytopenia may be persistent is shown in Case 5 (Fig. 1). This patient was observed for a year before splenectomy and, in spite of the repair of the anæmia which followed a large hæmatemesis shortly before he was first seen, the platelets (and leucocytes) remained persistently low during the whole period.

Group 2 (*Cases 10–16*).—In this group, corresponding to Rosenthal's thrombocythæmic group, the platelets were normal or, as in Case 15, increased. The leucocyte counts also were not quite so low. In six of the seven cases no history of hæmorrhage could be obtained, and the bleeding time and clot retraction were normal.

Case 15 (Fig. 2) is especially interesting. Observed for about a year, the platelets were always distinctly above normal. The bleeding time varied from normal (one and a half minutes) to five minutes. Clot retraction was always good, and clotting time rather reduced. During this period the patient had several attacks of abdominal pain followed by melæna, which were at first thought to be due to minor mesenteric thromboses. Recently, however, he has had purpuric hæmorrhages for which it seems impossible to account on a basis of thrombosis.

FIG. 3 (Case 4).



Thrombocytopenic type. Red cells, white cells, and platelets, before and after splenectomy.

Group 3 (*Cases 17–19*).—These cases show intermediate counts, but further study of this group is desirable, as in Cases 18 and 19 only a single observation was made.

Further observations, which cannot be dealt with fully here, were that in the low platelet cases a slight delay in clotting time and marked failure of clot retraction were invariably present, whereas in the thrombocythæmic group the clotting time was normal or somewhat shortened and the clot retraction good. After splenectomy the clotting time shortens slightly during the period of platelet elevation in all the cases, and returns to normal as the platelets return to normal. The retractibility of the clot is also much increased. In the only thrombocythæmic case splenectomised the shortening of clotting time was persistent and

TABLE SHOWING BLOOD FINDINGS AND CHIEF CLINICAL SYMPTOMS IN NINETEEN CASES OF "SPLENIC ANÆMIA."

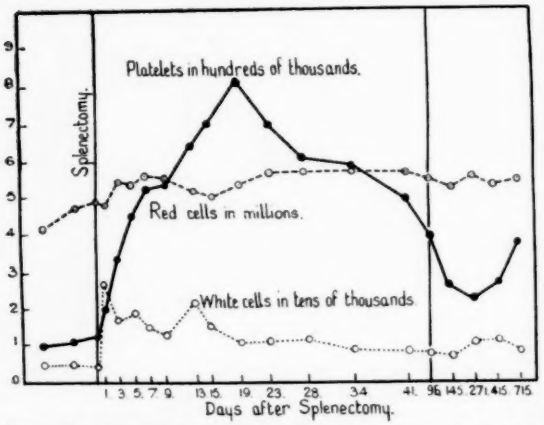
No.	Age.	Sex.	Hb.	Reds in millions.	Whites.	Platelets in thousands	Bleeding time in minutes.	Chief clinical symptoms.
1	31	M.	70	3,850 (0·4)	2812	120	5	15 yrs.; epistaxis; purpura; pain.
2	25	F.	45	3,450 (2·8)	3428	92	5 +	5 yrs.; epistaxis; bruising; menorrhagia; bleeding gums.
3	26	F.	82	4,560 (0·6)	4375	116	3	3 yrs.; bleeding gums; bruising; menorrhagia.
4	34	F.	35	3,525 (0·6)	3125	75	6 +	5 yrs.; anæmia; weakness; bleeding gums; purpura.
5	18	M.	35	2,250 (0·6)	6562	87	4 +	Hæmatemesis, aged 8; anæmia and hæmatemesis, aged 17; epistaxis, aged 18.
6	19	M.	83	4,575 (0·2)	4062	97	5 +	2 yrs.; weakness and pain; epistaxis; bleeding gums; purpura.
7	29	M.	45	4,215 (0·31)	4396	104	4	7 yrs.; repeated hæmatemesis; pain.
8	20	M.	43	3,670 (0·4)	4062	81	6	1 yr.; epistaxis; pain; several hæmatemeses.
9	56	M.	39	2,440 (1·9)	3438	53	5 +	10 yrs.; anæmia; pain; 4 years repeated hæmatemeses.
10	16	M.	38	3,725 (0·6)	5000	246	1	2 yrs.; pain; weakness; no hæmorrhages.
11	32	F.	44	4,050 (0·3)	9844	312	1½	8 mths.; anæmia; weakness; pain; no hæmorrhages.
12	20	F.	36	3,800 (0·6)	7187	226	No note.	2 yrs.; anæmia; weakness; no hæmorrhages.
13	5	M.	40	3,850 (0·8)	7188	292	1½	3 mths.; weakness; anæmia; not seen again.
14	53	F.	45	4,850 (0·3)	3188	287	"Normal"	3 yrs.; pain; weakness; no hæmorrhages.
15	25	M.	48	4,260 (0·7)	4843	550	1½ / 5	3 yrs.; pains; dyspepsia; hæmorrhage from bowel; purpura.
16	7	M.	30	2,880 (2·4)	6568	354	2	6 mths.; weakness; anæmia; no hæmorrhages.
17	34	M.	88	4,700 (0·3)	3125	191 / 148	1½	1 yr.; weakness; pain; no hæmorrhages.
18	30	F.	38	4,200 (0·8)	4062	151	1½	5 yrs.; recent large hæmatemesis; pain.
19	29	F.	45	3,420 (0·5)	6875	163	2½	6 mths.; pain; weakness; no hæmorrhages.

progressive until death. Full details are given in a paper in the *Journal of Pathology and Bacteriology*, 1928, xxxi., 815.

Operative Results.

Thrombocytopenic Group.—Five cases were splenectomised and two died on the fifth day from intestinal obstruction and broncho-pneumonia respectively. In three cases the operation was successful (Figs. 3, 4,

FIG. 4 (Case 7).



Thrombocytopenic type. Red cells, white cells, and platelets before and after splenectomy.

and 5†); two of these have been followed for two years. No. 6 absconded from the hospital a few weeks after the operation and was not traced. The platelet curves of these three patients are very similar. The platelets rise after splenectomy to a maximum of about a million in a little over a fortnight, and a further fortnight sees a considerable return towards normal. A normal count was reached in Cases 4 and 7 in about 90 days, and since then the platelets have fluctuated but little. Two years later both patients are well, the anæmia has disappeared, no further hæmorrhages have occurred, and both are back at work, No. 7 as a coal-miner and No. 4 as a housewife. Although the observations in Case 6 only covered 32 days, the shape of the platelet curve is quite similar to the others. It cannot be said that restoration to health for a period of two years is conclusive proof of complete cure, seeing that in many cases the natural course of the disease without splenectomy may be much longer than this. In both cases, however, the condition before operation was desperate—they certainly would have been dead by now unless they had been relieved.

Case Reports of Splenectomised Cases.

Thrombocytopenic Group.—CASE 4, female, aged 34. Five years' history, beginning shortly after delivery. Onset with anæmia, weakness, and left-sided pain. In the last two years bleeding gums and generalised purpura. Wassermann negative; van den Bergh less than 1 unit; urobilin in urine increased. Operation Feb. 21st, 1926. Weight of excised spleen 1380 g.

CASE 6.—Male aged 19. Two years' history, weakness and left-sided pain. Occasional nose-bleeding and frequent oozing from gums. Slight trauma produced severe ecchymoses. Wassermann negative; van den Bergh less than 1 unit; urobilin in urine increased. Operation Feb. 15th, 1927. Weight of excised spleen 1470 g.

CASE 7.—Male aged 29. Attacks of left-sided pain for seven years. Recurrent large hæmatemeses at intervals in the last four years. X ray of stomach negative. Wassermann negative; van den Bergh less than 1 unit; urobilin in urine usually normal. Operation Nov. 17th, 1925. Weight of excised spleen 840 g.

CASE 5.—Male aged 18. Large hæmatemesis when 8 years old. Afterwards always delicate, but no further hæmorrhages until ten years later, when there was rapid development of anæmia culminating in a massive hæmatemesis. Severe epistaxis shortly before splenectomy. Wassermann negative; van den Bergh less than 1 unit; urobilin in urine usually normal. Operation Oct. 28th, 1927. Spleen buried in dense adhesions; operation completed with difficulty. Weight 640 g. Intestinal obstruction due to kinking of splenic flexure. Death on the fifth day. Necropsy refused.

CASE 9.—Male aged 56. About ten years' history of anæmia and splenomegaly. Much X ray treatment to spleen in earlier stages. In last four years repeated large hæmatemeses; several just before operation. Slight icteroid tint. Wassermann negative; van den Bergh indirect test gave 1·5 to 2 units; urobilin in urine markedly increased. Operation Dec. 30th, 1927. Weight of excised spleen 1520 g. Death from broncho-pneumonia on fifth day. Necropsy refused.

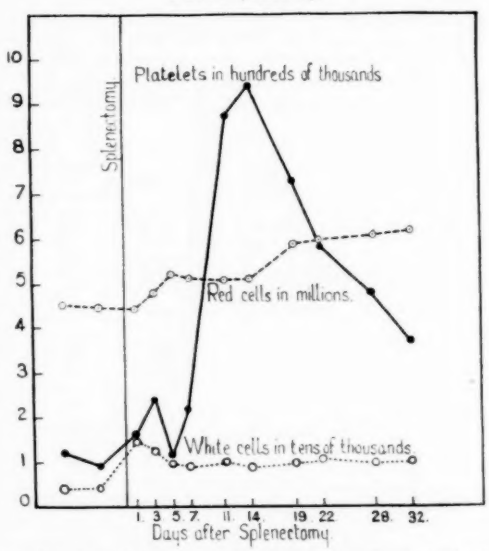
Thrombocythæmic Group.—Only one splenectomy was performed. As this patient died from mesenteric thrombosis splenectomy has been considered unjustifiable in other cases of this type.

CASE 10.—Male aged 16. Anæmia for some years. For two years pain, weakness, and increasing anæmia with nausea and occasional vomiting. No hæmorrhage. Wassermann negative; van den Bergh less than 1 unit; urobilin in urine markedly increased. Operation Sept. 29th, 1926. Weight of excised spleen 380 g. Persistent elevation of platelets after splenectomy with death on the thirty-first day. Several examinations of the stools in the few days immediately before death showed the presence of occult blood. Necropsy showed a recent thrombosis spreading from the splenic pedicle into the uppermost branches of the superior mesenteric vein, with gangrene of a proximal loop of the small bowel. The portal vein was patent. The splenic and superior mesenteric veins showed histologically a moderate degree of thickening, but no old thrombosis and no calcification. The liver showed a moderate degree of fatty change, but no cirrhosis.

The Morbid Histology of the Excised Spleen.

This paper does not concern itself with the histopathology of the disease and detailed descriptions are therefore omitted. It is, however, important to

FIG. 5 (Case 6).



Thrombocytopenic type. Red cells, white cells, and platelets before and after splenectomy.

mention that the six spleens examined gave no evidence of other specific disease. They all showed very close resemblances, and no histological difference could be determined between the five spleens from the low platelet cases and that of the single thrombocythæmic case. Thickening of the capsule and trabeculæ was constant. Overgrowth of the reticulum cells with irregularly spreading fibrosis was present in

† Figs. 3, 4, 5, and 6 are reproduced by the courtesy of the Editor of the Journal of Pathology and Bacteriology.

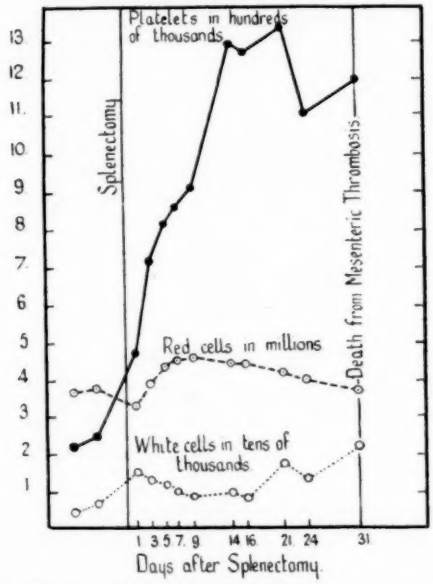
varying degree, but always marked. The fibrosis of the pulp encroached on the lymphoid follicles in an irregular way; in some parts of the organs the follicles were fairly numerous, in others almost completely destroyed. In those follicles which remained the lymphoid elements appeared fairly normal, but hyaline thickening and tortuosity of the Malpighian artery was invariably present. The splenic veins in the trabeculæ in most of the cases showed some degree of hyaline thickening, but thrombophlebitis within the organ itself was never observed. Examination of the stumps of the splenic veins at the hilus in all the cases showed some degree of thickening and sclerosis, but never calcification. In Case 4 one of the large branches of the splenic vein was partially occluded by organised clot. Sections prepared by Levaditi's method were negative for *Spirochæta pallida* in all cases. Cultures were made in four cases and were entirely negative. In no case was there evidence of siderosis.

This description agrees with the commonly described morbid changes in the Banti type, and more closely with Eppinger's "Banti-milz" than with his "thrombophlebitischer Milz."

Discussion.

It is evident from this confirmation of Rosenthal's work, coupled with the observations of Kaznelson and Mayo, that the platelets are of considerable importance in splenic anæmia. First, it seems clear that in the low platelet type of case, with subjective and objective evidence of hæmorrhagic tendency, splenectomy may be confidently recommended. Such patients are not immune from the usual surgical risks, as shown by the two post-operative deaths in the present series. If, however, they survive the immediate operative hazards, there would appear to be a good prospect of restoration to health. In the majority of our cases the operation was made appreciably easier by preliminary blood transfusion, which is desirable in cases with

FIG. 6 (Case 10).

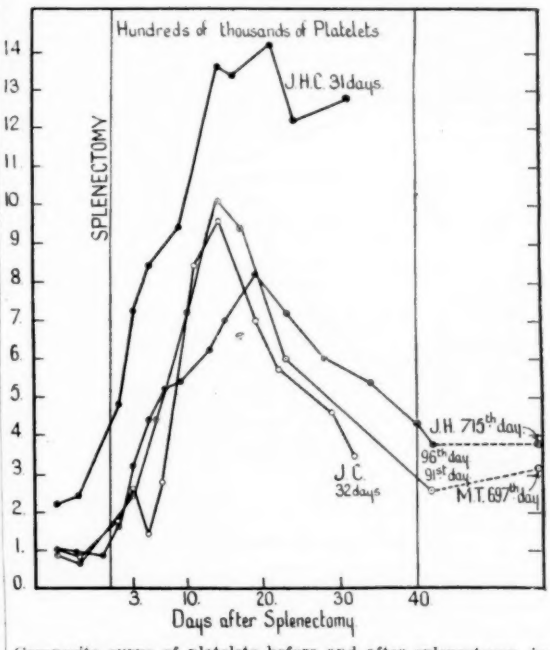

Platelets in hundreds of thousands
Splenectomy
Death from Mesenteric Thrombosis
Red cells in millions
White cells in tens of thousands
1 3 5 7 9 14 16 21 24 31
Days after Splenectomy

Thrombocythæmic type. Red cells, white cells, and platelets, before and after splenectomy.

hæmorrhagic tendency. In the other type of case, on the evidence available, splenectomy does not appear to be justified, as it exposes the patients both to the immediate risks and to the apparently inevitable danger of mesenteric or other thrombosis. On the other hand, it seems hardly justifiable to refuse splenectomy to patients who are doing badly, and appear likely to die unless relief is given. In these cases, however, the operation should only be undertaken with a very distinct realisation of its risks.

In the present state of knowledge it seems unsafe to go further and to make a definite ætiological distinc-

FIG. 7.



Composite curve of platelets before and after splenectomy, in Cases 4, 6, and 7 (thrombocytopenic) and in Case 10 (thrombocythæmic).

tion between the two types of case. In view of the current belief that the platelets are produced by the bone-marrow and destroyed by the reticulo-endothelial tissue in the spleen and elsewhere, Rosenthal's theory is tempting, but requires more support before it can be accepted. Further observations may yield important evidence both in regard to the origin of "splenic anæmia" and to the mechanism of platelet regulation.

Conclusions.

1. The hæmorrhagic tendency in splenic anæmia may be due to two factors: (*a*) A mechanical factor probably related to venous stasis associated with splenic and portal thrombophlebitis (hæmatemesis). This factor is not necessarily associated with thrombocytopenia. (*b*) An associated general hæmorrhagic tendency, which may be correlated with a deficiency of platelets. Such patients appear to be good operation risks and the prospects of permanent relief by splenectomy seem good.

2. Thrombosis of the splenic veins and portal vein is of frequent occurrence. It is possible in some cases that the venous thrombosis is the primary event (Eppinger's thrombophlebitic type), but differential diagnosis during life seems impossible.

3. Thrombosis, both in the portal system and in peripheral sites, may occur as a post-operative complication and may be correlated with a gross and persistent increase in the platelets after splenectomy. In some cases not operated on "platelet crises" may occur (Rosenthal) and possibly may be correlated with splenic and portal thrombosis.

4. It appears that, in the majority of patients exhibiting this thrombotic tendency, the platelets before splenectomy are usually normal or elevated. In these patients there appears to be considerable risk, after splenectomy, of thrombosis, which may be fatal. One cannot therefore recommend splenectomy with the same confidence as in those cases which present

thrombocytopenia associated with evidence of subjective and objective hæmorrhagic tendency.

It is a pleasure to acknowledge the interest taken in these investigations by my medical and surgical colleagues at the Royal Infirmary, Liverpool. I would particularly thank Prof. John Hay, Dr. J. C. Matthews, Dr. Henry Cohen, Mr. H. F. Woolfenden, and Mr. Frank Jeans, who have at all times given me the freest access to their cases, and permission for publication. I should also like to thank Mr. O. H. Williams, surgeon to, and Dr. C. H. Walsh, resident medical officer of, Mill-road Hospital, Liverpool, for similar permission in regard to two of the operated cases.

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HYPERTROPHY OF THE DISTAL PORTION OF THE ILEUM.

WITH A REPORT ON TWENTY-EIGHT CASES.

BY ROBERT MACKINLAY, M.B. TORONTO.

Sir W. Arbuthnot Lane, in his paper on the treatment of "Non-malignant Affections of the Colon,"[1] states: "This ileal kink is caused by an evolutionary band produced by abnormal loading of the bowel which is aggravated by the 'first and last' kink." For reasons suggested by the series of cases here described I believe that this ileal kink is caused by the cicatrisation of the lower leaf of the mesentery of the ileum as a result of recurrent attacks of appendicitis.

Six Representative Cases.

CASE 1, a man of 35, was in really good health until 1912, when, at the age of 20, he began to have what he called "bilious spells" of headache, vomiting, and abdominal pain. These spells gradually got worse and became more frequent. In 1915 the case was diagnosed as recurrent appendicitis, and appendectomy was advised. A diseased appendix was removed. His condition was not improved, and as time went on it gradually grew worse; the old symptoms were exaggerated and new ones gradually developed, until finally he never felt well. He was treated by me from 1921 to 1927 for gastro-intestinal disorders and cholecystitis. During that period I used alkaline bismuth mixtures, dimol, tonics, and lastly, large doses of hexamine with sodium bicarbonate, over a long period. The last-mentioned helped slightly, but the former did not help in the least. In 1927 he took an ocean trip, crossing the Atlantic twice, but this did not help. In the same year I advised a laparotomy and on May 27th I operated.

The symptoms just before the operation were: 1. Pain between the shoulder-blades—the most constant symptom. 2. Pain beneath the right costal margin, radiating round to below the right shoulder-blade. 3. Gas and a sour, hot, burning feeling in the stomach (so-called indigestion) after eating. What he ate did not seem to make any difference. 4. Frequent vomiting of meals, with much mucus, immediately after eating. 5. Severe pains in epigastrium at times. 6. Obstinate constipation. 7. Absence of any ambition or joy in living. 8. Nervousness, irritability, and inability to sleep well. 9. Much right frontal headache. 10. Constant weak miserable feeling. 11. Failure to feel refreshed after a night's sleep.

[1] THE LANCET, 1922, ii., 114.

The signs just before the operation were: loss of weight (140–118 lb.); pinched nervous expression; constant brownish-yellow tinge to skin; and tenderness over gall-bladder area.

The operation findings were: normal gall-bladder and cystic duct; normal liver and bile-ducts; normal stomach and duodenum; appendix had been cleanly removed. About six inches from the ileo-cæcal valve there was a marked contraction and thickening of the lower leaf of the mesentery supplying the ileum. This diseased area was about two inches long and caused a marked kinking and torsion of the ileum at that point. The walls of the ileum distal to the diseased lower leaf of the mesentery (i.e., from the kink to the cæcum) had the appearance of containing more blood than the normal proximal portion, were much thickened, and had a rubbery consistency. This contracted thickened lower peritoneal leaf was cut completely through and stretched so that the blood-vessels and subperitoneal structures of the mesentery were exposed. When this was done the kinking and torsion of the ileum were corrected and the circulation in the diseased portion of the ileum was improved.

On Sept. 25th, 1928, the patient reported as follows: 1. Gained 15 lb.; weight 133 lb. 2. Has a little gas after eating only when worried or when he bolts his food. These are the only occasions when food is brought up. 3. Has no mucus (or "phlegm" as he calls it). 4. Has no gnawing or sour, hot feeling in stomach. 5. Has no epigastric pain, but occasionally feels a little pain between his shoulder-blades. 6. Bowels evacuate regularly without medicine and are not in the least constipated. 7. Is full of "pep" and now can go out and enjoy life after a day's work. 8. After a hard day's work he sleeps restfully and awakens refreshed. 9. Not nearly so nervous and irritable. 10. He states that, though the immediate improvement was marked, he continues to improve.

CASE 2, a boy of 11, was well until 4 years of age, but since then has never had good health. He had frequent bilious attacks (vomiting, severe frontal headache, and felt very weak), which lasted from a few hours to two days. These bilious spells usually started at night, but strenuous games or indiscretion in eating would cause them. He never felt hungry and had much frontal headache. He was not constipated. He had very marked choreiform habits, such as blinking, sniffling, and irregular movements of head and hands. He had a dry skin and much trouble with eczema between his fingers. He had frequent colds. He was lethargic and found it very difficult to learn. His hands felt numb in the mornings and he had frequent cramps in the muscles of his legs. His tonsils were slightly infected and he had two infected teeth. On Nov. 28th, 1927, his appendix was removed with adhesions. The ileum was kinked by a marked contraction in the lower leaf of mesentery supplying the ileum, about four inches from the cæcum. This was freed as described in Case 1. The walls of the ileum were thickened and of a rubbery consistency. The tonsils and infected teeth were removed.

Report on Case on Oct. 1st, 1928.—1. He has not had a bilious attack since the operation. 2. He has only had one slight headache, which disappeared overnight. 3. He has an excellent appetite. 4. He has had no eczema since and no colds. 5. He still has choreiform movements, but they are greatly diminished, and are steadily improving with time. 6. He finds it easier to learn. 7. Numbness occurs only occasionally, and he has fewer cramps in the legs.

CASE 3, a man of 41, complained of having had indigestion and constipation since childhood. At times any food caused discomfort after eating (burning feeling below the umbilicus) and he frequently vomited his meals shortly after taking them. He suffered with severe right frontal headache, especially during the winter, and most of the time he had a trembling, nervous sensation. Of late years he has always felt tired and heavy; work has been a drudge, and his legs have at times felt too weak to carry him. His skin had a sallow brownish tinge and felt dry and burning. A few weeks before June 19th, 1928, he had slight cramp in the abdomen, below the umbilicus, centring to the right of the mid-line. In 1916 he consulted a prominent physician in Toronto and was given a very thorough examination. The diagnosis was "neurosis of the stomach" and treatment was instituted. No improvement was noticed, although the instructions were closely followed.

On June 19th, 1928, I operated and found an appendix which showed evidence of having had inflammatory attacks and was firmly adherent to the lower side of the mesentery, three to five inches from the ileo-cæcal juncture. It caused a marked kinking of the ileum at this point. The ileum distal to the kinking and extending to the cæcum was congested and thickened, and had the rubbery feeling noticed in other cases. The appendix was removed and the kink released by cutting across the thickened fibrous leaf of the mesentery involved. A few bands of adhesions on

the upper cæcum and ascending colon were also freed. The patient felt and looked very sick for ten days, and from then on he steadily improved.

Report on Case on Oct. 7th, 1928.—1. Since his operation he has been able to eat any ordinary food without the least discomfort. 2. He has a good appetite and has gained 10 lb. in weight. 3. His skin has lost the dry, burnt feeling and is moist and soft. He has lost the sallow tint and the heavy depressed appearance. 4. The tired feeling in his legs is gradually disappearing. 5. He does not feel or look nervous. 6. He has had no headache. 7. He is not constipated. To use his own expression, "I have never felt like this before."

CASE 4, a man aged 51, had symptoms similar to those described in Cases 1, 2, and 3, except that for the two days before his operation he was unable to get his bowels to evacuate and had very severe cramps. At operation I found a subacute appendix surrounded by adhesions which continued along the mesentery of the ileum and bridged across to the upper part of the sigmoid colon, where they left a ring of about one and a half inches in diameter. Passing through this ring was a much distended loop of descending and sigmoid colon about two feet in length, and also a loop of distended, thickened ileum two or three feet in length. I believe these loops had been in this position for some time, but owing to the increased congestion caused by the subacute attack of appendicitis a complete obstruction resulted. The thickened contracted lower leaf of the mesentery was freed by cutting for a distance of about eight inches—that is from the appendix to the sigmoid colon—and in this way the obstruction of the colon and ileum were released.

The convalescence of this patient was slow. At the end of ten days the abdominal suture began to give way and pus exuded from the wound. Finally, the whole wound gaped down to the peritoneum. Gradually the patient's condition improved and the wound was resutured and united well. The patient was discharged from hospital on Oct. 22nd, 1927. I saw him last in July, 1928, pitching hay in the mow. He claimed that he felt better than he had for years. He had a good appetite and was able to eat ordinary food without discomfort. He was not constipated. He had gained considerable weight and now had a cheerful outlook on life.

FIG. 1.

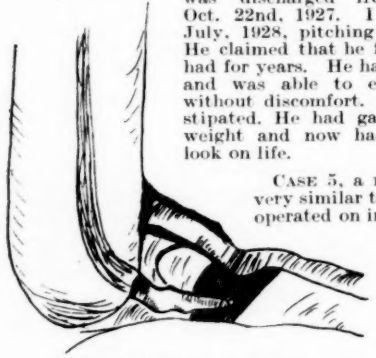

Diagram showing area affected.

CASE 5, a man aged 55, was very similar to Case 4. He was operated on in November, 1927, and presented the most extensive formation of scar tissue I have seen, resulting from what I believe were recurrent attacks of appendicitis.

CASE 6, a girl of 16, had signs and symptoms of acute appendicitis. She gave a history of recurrent similar attacks, but had felt well in the intervals. On June 28th, 1928, an operation was performed and an acutely inflamed appendix with a bulbous end was removed. A dense scar about one-half by one-quarter of an inch was situated on the lower leaf of the mesentery of the ileum about two inches from the cæcum. The ileum was normal. I mention this case because it illustrates the beginning of the thickened contracted mesenteric leaf referred to above.

Grouping of Cases.

I have selected these six cases as representative of the series of 28 cases I have observed, and they conveniently fall into three groups.

Group 1.—Case 6 illustrates a number in which the cicatrisation of the mesentery has just begun and has not interfered with the circulation of the mesentery and the ileum. In these cases no symptoms other than those of appendicitis were produced.

Group 2.—Cases 1, 2, and 3 are representative of those where the formation of scar tissue in the mesentery has caused a mechanical interference to the circulation of the mesentery and the distal portion of the ileum, but has caused no mechanical interference with the passage of fæces. In these cases we find superimposed upon the symptoms and signs of appendicitis other symptoms and signs which are always present. These cases formed the largest group of the series.

Group 3.—Cases 4 and 5 illustrate a group most advanced in the formation of scar tissue. In this group signs and symptoms of intestinal obstruction were superimposed on the signs and symptoms found in Groups 1 and 2.

Theory of the Causation of Hypertrophy of the Ileum beyond the Kink and of the Signs and Symptoms.

The ileo-colic artery and vein convey blood to and from the distal portion of the ileum and the first portion of the colon. They anastomose with the right colic artery and vein. The cicatrisation of the lower leaf of the mesentery of the ileum, caused by recurrent

FIG. 2.

(1) (2) (3)

Cross section of mesentery and ileum. (1) Normal; (2) scarred mesentery; (3) more advanced. Notice the shortening and thickening of the lower leaf of peritoneum of the mesentery. It also illustrates the rotation of the ileum on its longitudinal axis. The arrows indicate the same point on the ileum.

attacks of inflammation, interferes with the return flow of venous blood from the ileum beyond the kinking and therefore produces a chronic congestion in the walls of this portion of the ileum. This congestion, persisting over a period of time, causes an hypertrophy of the tissues of the ileum just as a stricture round a finger will cause an hypertrophy of the distal portion of the finger. The free anastomosis of the ileo-colic vein with the right colic vein enables the venous blood of the first part of the large bowel (but not of the ileum) to escape without causing congestion and hypertrophy of the first portion of the colon.

This interference with the circulation of the ileum causes a devitalisation of the cells of its affected portion, the degree of devitalisation depending upon the amount of interference with the circulation. The devitalisation of the cells of the ileum may produce the toxin which is absorbed by the blood stream or may upset the selective absorptive power of the diseased portion of the ileum so that it now absorbs toxic substances as well as the normal products of digestion. These toxic substances in the blood stream then act upon the different types of tissue cells with which they come in contact and so produce the various symptoms. Thus I believe the constipation found in the cases of Groups 1 and 2 is not mechanical, for the ileum proximal to the kinking is never packed with fæces. I think the constipation is due to the lethargic state of the nerves and muscles of the colon, which results from the action of the toxic substances.

The Operation.

After removal of the appendix by the right rectus incision the ileum is examined for some distance back from the cæcum. If a band of cicatricial tissue is found in the lower leaf of the mesentery this is cut completely through, great care being taken to cut every strand of scar tissue, but not to injure the subperitoneal structures of the mesentery. This removes the cause of the interference with the circulation of the ileum and the ileal kink. Nothing further was done to the mesentery, and every case healed by first intention without any signs of infection, except Case 4, and he had no signs of intraperitoneal infection.

Comment.

My reasons for regarding cicatrisation of the mesentery as the cause of the ileal kink are:—

(1) Case 2, as well as a few others in the series, had evidence of recurrent attacks of inflammation in the

appendix, but was not constipated. Nevertheless he had a marked ileal kink and scarred mesentery.

(2) Constipation, which was present in the majority of cases, was cured or greatly diminished by removing the appendix and freeing the band causing the hypertrophy. Had the "first and last kink" and not the diseased ileum been the cause of the constipation, then no relief, much less a cure, would have resulted from freeing the cicatrised band of mesentery only.

(3) The contracted scarred mesentery of the ileum, as shown in Figs. 1 and 2, in every case of the series produced the kink by pulling the ileum down, rather than by pulling it up to form an internal lateral ligament to support the cæcum, as described by Sir Arbuthnot Lane.

Failure to separate this mesenteric band when it is present is, I believe, a frequent reason why patients do not feel any better after the removal of a diseased appendix. Sometimes it is not prudent to search for this band, but, if the case permits, whenever a diseased appendix is removed this mesenteric band should be sought and dealt with if found. The thickening of the ileum, or "hypertrophy," as I have called it, is probably not a true hypertrophy. To produce this condition artificially in animals and then make physiological and histological examinations might be an interesting field for research.

Clinical and Laboratory Notes.

A NOTE ON CRETINISM, DIABETES, AND PREGNANCY.

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THE interesting features of the following case are the occurrence of hypothyroidism in mother and daughter, and the association of cretinism, diabetes, and pregnancy in the daughter.

The mother was seen to be suffering from myxœdema when she visited the hospital with her daughter this year. She was 56 years old, and had had eight children, of whom four survive. The youngest, who later developed cretinism, was born when she was 33. At 37 the catamenia, having previously been regular, ceased. At 50 she began to get stout, felt that her memory was getting worse, and had a vague fear of something that was going to happen. She was afraid to go out by herself. The skin of the hands and feet became dry and cracked, her hair began to fall, she readily felt the cold, and the bowels were very constipated. During the last year all symptoms had become worse. She was a short, stout woman, with a pale yellow complexion and a skin that was dry and inclined to be scaly, especially on the hands and feet. The hair of the head was fine and dry, and the eyebrows thin, especially in their outer halves. The thyroid was not palpable and there were no supraclavicular pads. The only other abnormality was a mild secondary anæmia. She was treated with thyroid extract, commencing with grs. 5 a day, the dose being afterwards reduced to grs. 2. She responded well to treatment.

The daughter was admitted to hospital for menorrhagia in December, 1926, when she was 21 years old. Since 9 years of age she had been noticeably pale, with feelings of faintness and breathlessness on exertion. The catamenia commenced at the age of 19. The periods occurred every three months and lasted one to three weeks; there was some pain and the loss was excessive. There was no diabetes in the family. She was small and childlike, measuring only 4 ft. 6½ in. Her eyes and expression were dull, but she was fairly intelligent and had done book-keeping in an insurance office. She did not go out much, but read a great deal, being especially fond of Dickens and Rider Haggard. The face was broad and expressionless, the bridge of the nose poorly formed, the alæ broad, and the lips thick. The hair was short, dry, straight, and thin, and the eyebrows scanty. The complexion and the mucous membranes were pale, and the hands broad and spade-like. The skin of the whole body was dry and rough, with a thickening of the subcutaneous tissues, though not to the degree usually found in adult myxœdema. There was no pubic or axillary hair, but the breasts were well developed and the uterus was of normal size. The thyroid was not palpable. There was a severe anæmia. The Wassermann reaction in the blood was negative.

She was treated with thyroid extract, grs. 3 daily, and made steady and remarkable improvement. Her weight fell from 5 st. 6 lb. to 4 st. 11 lb., the skin became softer in texture, and the hair softer and curly. Her features became more finely chiselled, her eyes brighter, and she was much more intelligent and active in every way. Her hands became more shapely. She was discharged on the same dose of thyroid extract.

There was little growth in height, and in these last two years she has gained only 1 in. The periods occurred regularly every month, lasted about five days, and were normal in quantity. Her mental condition changed greatly. She went out to entertainments and dances and enjoyed being with members of the opposite sex. She continued very well on thyroid extract, grs. 3 daily, until September, 1927, when she was readmitted to hospital with a history of six weeks' thirst, polyuria, and weakness. The urine contained much sugar, and the blood-sugar was 0·22 per cent. She responded well to diabetic treatment and was discharged with normal blood-sugar and sugar-free urine, without insulin, on a diet of carbohydrate 56, protein 53, fat 92, and calories 1264. The weight was 5 st. 11 lb.; the dose of thyroid extract was reduced to gr. 1 daily. She did not adhere strictly to the diet and often had sugar in the urine, though she became sugar-free on the same régime on readmission to hospital in April, 1928. Glycosuria and ketonuria recurred soon after discharge, and in May 10 units of insulin twice a day were prescribed with the same diet. In June she was sugar-free, but reported that she had had no menstrual period for three months. Her interest in the opposite sex had confessedly been an active one, and she was pregnant. She remained sugar-free until August when, owing to an oversight, no insulin was prescribed, though the thyroid extract was continued. On Sept. 12th she was readmitted to hospital in coma, having taken no insulin for six weeks. The blood-sugar was 0·44 per cent. In the first 24 hours she received 200 g. of carbohydrate and 200 units of insulin; in the next 24 hours carbohydrate 115, protein 14, fat 6, and 100 units of insulin. She came out of coma, the blood and urine became normal, and in a few days she was back on her usual diet. The fœtal heart was not heard. Labour commenced spontaneously on Sept. 13th, and she was delivered of a 7–8 months fœtus which showed early maceration. Her breasts secreted milk.

At present (Nov. 1st, 1928) her weight is 5 st. 11 lb., and her height 4 ft. 7½ in. The appearance is infantile, but not myxœdematous. Axillary hair is absent, pubic hair is scanty, but the breasts are well developed, and she has menstruated normally again since the confinement. On a diet of carbohydrate 60, protein 55, fat 87, and calories 1243, she is sugar-free and has a blood-sugar of 0·133 per cent., with insulin 12½ units twice a day and thyroid extract grs. 2 daily. There is still a moderately severe anæmia.

Discussion.

Hypothyroidism is a great, but not an absolute, bar to pregnancy. Howard, in his study of 100 cases of myxœdema, found one in which pregnancy occurred soon after the onset of the disease and another in which it occurred at its height. The occurrence of pregnancy in this girl, who suffered also from another disease inimical to pregnancy (diabetes), is evidence of the completeness of substitution therapy. Her mother had no signs of myxœdema at the time she was born, but the early menopause four years later, at the age of 37, is suggestive. Gordon Paterson recorded the case of a woman who gave birth to cretinous children in her first two pregnancies. The first child recovered with thyroid treatment, the second died soon after birth; neither the woman nor her husband showed signs of hypothyroidism. In her third pregnancy she was treated with thyroid extract and gave birth to a healthy child. The inheritance of hypothyroidism is well established. MacIlwaine reported the case of a woman in whom myxœdema followed an attack of Graves's disease. She subsequently became pregnant. The child was normal at birth, but a year later cretinism set in after an attack of diarrhœa. Mother and child responded well to thyroid treatment. There are many examples of hypothyroidism in children of the same family. The Clinical Society's report contains several instances of myxœdema in sisters. Herrman saw two families in each of which three of the children suffered from sporadic cretinism. In both families not only were there other normal

children, but normal children were born between the abnormal. Herrman also noted cretinism in one of twins. Howard found that 8 out of 68 patients with myxœdema 11·8 per cent. gave a family history of myxœdema. Hun and Prudden, who reviewed 150 cases of myxœdema reported in the literature, found that in 8 per cent. there was direct inheritance of the disease, and that in about an equal number of cases the disease occurred among brothers and sisters.

Hypothyroidism and Diabetes.

A priori one would expect the association of hypothyroidism and diabetes to be rare, for sugar tolerance is increased in hypothyroidism. Eaves and Croll have recently published their post-mortem findings in a cretin who died untreated at the age of 14½. The pancreas, though small, was proportional in size to the body. They made a quantitative estimation of the amount of islet tissue; normally this forms about 2 per cent. of the pancreas, but in the cretin it was 3·54 per cent. This observation is supported by experiments on animals, in which the amount of islet tissue is increased after thyroidectomy. In thyroidectomised animals the amount of sugar in the fasting blood is diminished and the blood-sugar curve runs at a lower level than before the operation. The hyperglycæmia produced by a given dose of adrenalin is less and the hypoglycæmia produced by a given dose of insulin is greater. The coexistence of typical adult myxœdema and diabetes is still uncommon enough to be worthy of report. Nevertheless, conditions in the adult are not so clear-cut as in the cretin or the experimental animal. Gardiner-Hill, Brett, and Smith found the fasting level of blood-sugar within normal limits in most myxœdema cases. The blood-sugar curve was higher and more prolonged than in normal persons. Glycosuria was rare, and he suggested that the renal threshold was raised. Treatment with thyroid extract did not raise the fasting level of blood-sugar in myxœdematous patients; its general effect was to lower the blood-sugar and to quicken the curve. I have sometimes suspected an element of hypothyroidism in obese diabetic women at or after the menopause and have seen patients greatly improved on treatment by undernutrition and thyroid extract—an improvement not confined to the diabetes.

However this may be, there is no doubt of the rarity of diabetes in juvenile myxœdema or cretinism. I have found accounts of only five cases. Gordon (quoted by Strasser) saw diabetes in two brothers, aged 3 and 4½, who were cretins; he believed that the diabetes was favourably influenced by thyroid treatment. Strasser's patient developed cretinism in infancy and did not come under thyroid treatment until he was 7. He made great improvement, but a year later diabetes set in and thyroid treatment was discontinued, as it seemed to accelerate the emaciation. He died 18 months later. Apert's patient was a cretinous dwarf, who measured only 1·45 metres. Growth had continued up to the thirty-sixth year. At the time of Apert's paper he was 66 and had had diabetes for at least four years; the urine contained about 70 g. of sugar a day. No observations were made on the effect of thyroid treatment. Wilder's patient showed signs of diabetes at the age of 15 months. He was placed on a strict diet which, after six months, was relaxed without the return of glycosuria. Hypothyroidism appeared at the age of 3 and thyroid treatment was begun; it was discontinued on account of the return of glycosuria. During thyroid treatment growth was resumed, but after its discontinuance growth again stopped and the tolerance improved so that the child could eat anything without excreting sugar. Subsequent administration of thyroid once more caused growth to be resumed, but only at the cost of a severe diabetes, the child continuing to excrete sugar on a very low diet. It is clear that simultaneous diabetes and cretinism led to a therapeutic impasse in pre-insulin days. There are several reasons for this. The administration of thyroid extract not only raises the basal metabolism, from perhaps minus 40 per cent. to normal, but it also replaces vegetation by activity and growth, both of which mean an increased caloric requirement. The sexual system is stimulated to maturation. In Joslin's curves showing the age of onset of diabetes the peaks are at puberty and the menopause, the periods of evolution and involution of this system. Juvenile diabetes was formerly almost always fatal because of the demands made by activity, growth, and puberty. In the cretin treated with thyroid extract they are especially urgent. Nowadays, however, insulin allows us to satisfy the demands of the juvenile diabetic and enables these children to grow to maturity. The case I have reported shows that this is true also of the diabetic cretin who is receiving thyroid, and that the two forms of substitution therapy are not incompatible.

The pharmacological antagonism of thyroxin and insulin was demonstrated in the animal experiments of Burn and Marks, who found that thyroid feeding decreased the hypoglycæmic reaction to insulin. Apparently the liver became more sensitive, and therefore glycogenolysis more readily occurred when insulin was injected. I do not know that these results are absolutely comparable with clinical practice. Very large doses of thyroid were used, one animal losing nearly one-third of its weight in 20 days. From a study of the literature it appears that, although the sugar tolerance of normal subjects is fairly easily disturbed by thyroid extract, this is not likely to happen in the treatment of definite hypothyroidism. Thus the work of Gardiner-Hill, Brett, and Smith indicates that thyroid treatment does not have a harmful influence on the sugar tolerance of adult myxœdema. "Bottman found that 55 per cent. of patients with maladies other than myxœdema developed a temporary glycosuria under the experimental administration of thyroid extract. On the other hand, Scholtz, among 100 cases of cretinism, was unable to produce by thyroid administration a single case of even alimentary glycosuria" (Howard). My own experience is that thyroid extract may sometimes be of value in the treatment of obesity and *diabète gras* and, as long as symptoms of thyroid intoxication are avoided, the danger of producing or aggravating a glycosuria is not greatly to be feared.

The subject of diabetes and pregnancy has been so recently reviewed by Parsons and by Joslin that there is no need to add much on this point. "Diabetes is more menacing to pregnancy than pregnancy is to diabetes." Conception is infrequent on account of amenorrhœa, of vulvitis, vaginitis, and cervicitis, and of voluntary prevention. Before insulin at least 50 per cent. of pregnancies ended in miscarriages or stillbirths, and the mother ran a grave risk of coma at delivery, puerperal infection, or aggravation of the diabetes. Even with insulin the danger is great. The metabolism is very delicately balanced, and supervision must be close to ensure a normal delivery.

I wish to thank Prof. A. W. M. Ellis for permission to publish this case.

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A SERIES OF MONSTERS.

By E. Joan Parry, M.R.C.S. Eng.

The following case appears worthy of record.

A woman, aged 37, was confined in August, 1925; the child was stillborn, an anencephalic monster with a spina bifida. She was confined again in July, 1926. This was a difficult labour and the fœtal skull had to be perforated. The fœtus had a marked hydrocephalus with a hare-lip and cleft-palate. At the last confinement in July, 1927, she had twins; one was mummified, about 1 lb. in weight, and born in thick greenish fluid surrounded by the membranes. The other baby (girl) appeared perfectly normal but was premature and weighed only 3¼ lb. It developed normally.

Before her marriage this woman had four illegitimate children, all of whom were perfectly healthy. These were the only three children by the husband. In each case for the last two months of pregnancy she showed marked signs of toxæmia—œdema of legs, albuminuria. The father's blood gave a negative Wassermann.

Bristol.

Medical Societies.

ROYAL SOCIETY OF MEDICINE.

SECTION OF ANÆSTHETICS.

At a meeting of this Section held on Feb. 1st the chair was taken by Mr. Ashley S. Daly, President, and a paper was read by Dr. R. D. Lawrence on

Post-Operative Acidosis.

He began by describing the mechanisms which keep the body in the alkaline balance essential for its activities. The reaction of a fluid, he said, depended ultimately upon the hydrogen- and hydroxyl-ions in it, and was formulated by the term "pH," a negative logarithmic expression of the number of free hydrogen-ions. The neutral pH was 7 and the normal pH of the blood was 7·4. In severe acidosis the blood might have a pH of 7, which meant four or five times as much acid as normal. The chief of the "buffer substances," which kept the blood alkaline at their own expense, was sodium bicarbonate—the "alkaline reserve" of the blood. The relation between the free carbonic acid and the sodium bicarbonate was a constant of 1 : 20. Any added foreign acid was at once combined with the bicarbonate reserve, and as that was reduced the free carbonic acid had to be reduced also to maintain the constant. This was brought about by over-breathing and increased excretion of carbon dioxide through the lungs. There were many other mechanisms to counteract any acid condition; the phosphates, the proteins, and the hæmoglobin all played their part, and excess of acid was got rid of in the urine, largely neutralised by ammonia. In ketosis there accumulated in the blood and urine certain substances, of which the best known was acetone and the most important hydroxyl-butyric and diacetic acids. These were products of incomplete oxidation of fats, and might appear in the urine without any lowering of the alkali reserve; they were excreted whenever insufficient carbohydrate was being burned and were probably an expression of lack of sugar and glycogen. They appeared in normal people under conditions of starvation.

The Production of Acidosis after Operation.

Inhalation anæsthesia definitely reduced the pH of the blood within 20 minutes of induction, causing a fall in alkaline reserve, though rarely of more than ten volumes per cent. Ketonuria was much less frequent and apparently secondary to the common, slight, real acidosis. Chloroform was the greatest offender; closed ether produced acetone bodies in the urine in 89 per cent. of cases, but open ether only in 26 per cent. Ketonuria and acidosis were not, however, unknown even after spinal and local anæsthesia. Novocaine had been found to produce a small decrease in the alkaline reserve—about 5 volumes per cent.—in half the cases examined, but these were practically all abdominal operations; the condition did not occur after operations on the extremities. Ketonuria followed shock or severe fractures, and was much more common in children, women, and nervous and anxious patients. Excitement and mental shock were important ætiological factors. The mechanism of its production was difficult to explain; the factors were complex and probably multiple. Certain facts had been definitely established.

Acidosis was produced by sleep because of the insensitiveness of the respiratory centre to the stimulus of carbon dioxide. In anæsthesia the centre was still more depressed; the respiratory centre of anæsthetised dogs was not stimulated by an increase of carbon dioxide. Another factor that led to acidosis was anoxæmia. Anæsthetics produced anoxæmia by causing a slight degree of asphyxia and by reducing the blood pressure and causing slight shock. They also depressed the metabolic function of the cells and reduced their consumption of oxygen. Post-operative acidosis, therefore, was probably caused largely by the depression of the respiratory centre and of the circulation, and the resulting condition of anoxæmia. Its occurrence in local anæsthesia, however, demanded another explanatory factor. Local and spinal anæsthetics, however, were not always free from shock—mental if not physical—and it was noticeable that minor operations on the extremities were not followed by acidosis. Ketosis was easier to explain than real acidosis. It depended on a temporary upset of carbohydrate metabolism, and all forms of inhalation anæsthesia raised the blood-sugar, sometimes causing glycosuria. This was because the glycogen store of the liver was rather quickly depleted by anæsthetics, and so the metabolism changed over from carbohydrate to protein and fat, and ketone bodies were produced. Protein metabolism meant further production of acids, which in its turn reduced the alkaline reserve. Insulin action was always defective in conditions of acidity. Adrenalin also disturbed the carbohydrate metabolism and raised the blood-sugar, and there was increased output of adrenalin in excitement, shock, and anxiety.

The Control of Acidosis.

It had long been known that the tendency to ketosis after operations could be stopped by giving plenty of carbohydrates. Neither these nor alkalies, however, prevented the slight fall in the alkaline reserve, which was most difficult to control. In normal individuals it was of no importance at all; it did not cause chronic symptoms or vomiting. It could not be prevented with certainty by any preparation of the patient, although the administration of glucose and insulin was the most likely method to succeed. If the patient had established ketosis or acidosis before the operation efforts should be made to protect him. Those who had acidosis without ketonuria were mostly chronic nephritics or sufferers from wasting diseases. They were difficult to recognise without chemical tests, but operative procedures were avoided on them for other reasons. If they must be subjected to operation the anæsthetic should be spinal or local if possible and they should be prepared by a moderate dose of sodium bicarbonate—e.g., eight drachms a day for a few days—and an abundant carbohydrate diet.

Those who had ketonuria without any real acidosis were both more common and more important. Most often acetone bodies were present in the urine without any real acidosis, but if they were present in large amount it might mean that the alkaline reserve was reduced. In these patients an operation, with the resulting increased ketosis, might lead to headache, nausea, vomiting, and depression, or even liver damage—especially if sepsis were present. A liver without its normal store of glycogen was much more sensitive to the toxic action of chloroform and ether. The presence of ketone bodies in the urine in such cases constituted a danger-signal which should not be ignored. Among non-diabetics pregnant women were especially liable to this danger, and children more

than adults. The significance of the ketone bodies depended on their quantity. If only the nitroprusside test were positive, small amounts were present; a positive ferric chloride test meant serious if not dangerous quantities. The operation should be postponed until the ketone bodies had been got rid of by a liberal carbohydrate diet, which usually took 24 or perhaps 48 hours. There was no point in giving insulin to the non-diabetic, as the sugar stimulated insulin production from his own pancreas. If the ketosis were severe and the patient very toxic the sugar might not provoke the adequate response, and in that case insulin should be given along with it. If the case were an emergency and the operation could not be postponed spinal or local anæsthesia should be used. Gas and oxygen with a minimum of ether was the next best, and chloroform should be avoided. Glucose must be got into the system as soon as possible—50 g. by mouth if the patient could take it—and rectal administration during and after the operation. If the degree of ketosis were not great this would be sufficient. If, however, the ferric chloride test were positive the situation was serious; 50 g. of glucose with abundance of saline should be given intravenously, together with 20 units of insulin, before the operation, followed up with rectal glucose. If the alkaline reserve were known to be low six or eight drachms of sodium bicarbonate should be added to the intravenous dose; not more, for overdosage had grave depressing results.

All operations tended to make diabetics worse, causing severe ketosis and acidosis, perhaps coma. As good a supply of glycogen in the liver as possible should be secured by giving them more carbohydrate than usual and considerable amounts of insulin. If, however, there was time to prepare them properly diabetics could go on the table as normal operative risks. It was as well in addition to give 20 units of insulin and an ounce or an ounce and a half of sugar an hour and a half before the operation. The best dose could only be established by a blood-sugar estimation, but if this were unobtainable in an emergency 20 units of insulin and 20 g. of sugar should be given before the operation and repeated four-hourly after it. If there were not much sugar in the urine, or it rapidly disappeared, the sugar-dose should be twice that of the insulin. In severe cases these doses might, of course, be quite inadequate. Diabetics did well under gas and oxygen and ether, but the spinal method was the better one for them.

Discussion.

Dr. P. J. CAMMIDGE suggested that Dr. Lawrence might have laid more stress on the ultimate cause of acidosis in the chemical composition of the tissues rather than of the blood. The cells of the body were like chemical batteries, and alteration in the concentration of the chemicals in them meant alteration in the current. There might be an alteration in the alkali reserve without symptoms, or symptoms might appear without any alteration in the reserve. Another factor was variation in the amount of water retained by the tissues. Alteration of the proportion of the electrolytes in the cells meant alteration in their volume of water. The causes of acidosis might be divided into distinct groups: (1) anhydræmia, as produced by vomiting, diarrhœa, and polyuria; (2) over-production of the normal acid products in the body—lactic, phosphoric, sulphuric—as in nephritics; (3) removal of the alkaline bases of the cells—this also acted in nephritics, because the damaged kidney could not produce the ammonia required to neutralise these acids and so had to use bases; (4) the formation of abnormal acids, as in diabetes; and (5) changes in the osmotic pressure between cells and plasma. Whether these changes produced acidosis or alkalosis depended on how they were brought about. It did not necessarily follow that because a patient had the symptoms of acidosis that he had actual acidosis; he might have alkalosis, which was not at all rare after operations and was recognised by the absence of chlorides from the urine. If the chlorides were low it was advisable to give salt intravenously with glucose. It was important to recognise the child who suffered from cyclical vomiting and to give carbohydrate before any operation. These children had inherited, as a Mendelian dominant, a liver that could not store glycogen normally. Oatmeal cooked for five or six hours was preferable to glucose, especially for children; it contained a molecule that the liver utilised more effectively than any other.

Prof. E. C. DODDS said that in his experience post-operative acidosis was very rare indeed, and asked for a definition of it from the anæsthetist's point of view, as the clinical definition was most important. He asked why it was that women in childbirth stood chloroform so well.

Mr. F. E. SHIPWAY said that anæsthetists would all agree that this was a laboratory problem and very rare in practice. Chloroform was not good for pregnant women who were having surgical operations, but the anæsthesia used in childbirth was very light. Only deep chloroform anæsthesia caused acidosis.

Dr. KINGSTON BARTON pointed out that the woman in labour was breathing deeply and rapidly, and so could take chloroform with impunity.

Mr. ZACHARY COPE described a case of post-operative acidosis clinically, but said that he had not seen one since chloroform had been abandoned for abdominal operations.

Mr. C. H. HUGHES said that all surgical cases should have their urine examined for ketone bodies.

Mr. R. E. APPERLY recalled the first cases of delayed chloroform poisoning described from Paddington Green Children's Hospital. Most of them had had a very short anæsthetic. His experiments on animals had confirmed the suggestion that it was short, deep chloroform administration that was dangerous.

Dr. J. BLOMFIELD pointed out that some of the early cases at Great Ormond-street had had very short ethyl chloride anæsthesia. The condition was not seen now that chloroform was little used.

The PRESIDENT said that the only fatal case he had seen had been after a very short anæsthetic, and asked how to treat a patient with cyclical vomiting at an emergency operation.

Reply.

Dr. LAWRENCE said that if there was an hour to spare the child should have an ounce of glucose by the mouth; if there was no time intravenous glucose should be given during the operation, and if the child were very toxic ten units of insulin could be added. Acidosis had very little to do with grave post-operative toxæmia, the toxins of which were quite different, although always associated with ketone bodies.

MEDICAL SOCIETY FOR THE STUDY OF VENEREAL DISEASES.

A MEETING of this Society took place at the House of the Medical Society of London on Jan. 25th, Dr. DAVID NABARRO occupying the chair. The subject of discussion was the

TREATMENT OF GENERAL PARALYSIS OF THE INSANE BY PYROTHERAPY.

Dr. W. D. NICOL opened the debate. He said that at the Horton Mental Hospital the patients were certified before being admitted. Usually the diagnosis of general paralysis did not present many difficulties. A matter of great importance was the physical condition of the patient, since the severe malarial attack was liable to test his strength considerably. While early cases showed most favourable results, advanced cases also could safely be treated by this method, provided that physical examination revealed no definite organic disease, especially in the circulatory and renal systems. Septic foci in the teeth and the alimentary system should be dealt with before commencing the malaria treatment. At Horton, by arrangement with the Ministry of Health and the London County Council, a special block was set aside for treatment by malaria. The stage of

development of the parasite must be sufficiently advanced, so that when the mosquito bit it will be effective. The incubation period varied from 10 to 14 days, and it was important that no untoward event should happen during that time. The patient was put on a four-hourly temperature chart from the eighth day of the infection onwards; and routine blood examination dated from the first febrile manifestation. During the initial stage the symptoms resembled those in a commencing attack of typhoid fever, though the temperature was more "spiky" in character. In the developed stage the parasites could easily be seen in films of the blood, and during the first few days their numbers increased.

Dr. Nicol regarded as the most important procedure in the treatment the temporary interruption of the course of the fever, since this was one of the biggest factors in reducing mortality from induced malaria. The indications for this temporary interruption were a heavy parasite count, persistent vomiting, fainting, cyanosis, and so forth. Ten to 12 paroxysms of fever should be aimed at, after which the attack could be terminated by quinine, small doses being just as effective for this purpose as large ones. After treatment, as the patient was left anæmic he should be given an iron tonic. As to results, it was found that about one-third of the patients were so improved physically and mentally that they could be discharged; one-third were improved physically, but not sufficient mental change was apparent to justify discharge; while the remaining third showed no change for the better, but progressive deterioration. The sooner general paralysis of the insane was diagnosed the better chance had this treatment of bringing about recovery. In mental hospitals, where cases were not admitted until certified, there was necessarily delay in instituting the treatment, and this was regrettable.

T.A.B. Vaccine.

Dr. J. M. MACKENZIE said that many general paralytics suffered from chronic sepsis in addition to syphilis, and the sepsis might be responsible for at least some of the more acute symptoms, such as restless motor excitement with destructiveness. Glaessner had found that cases of enteric fever showed a striking immunity to influenza, and for this and other reasons it was decided at Rubery Hill Mental Hospital, Birmingham, to try the effect of T.A.B. vaccine. Injections with a B. & W. product were given intravenously each day for ten days, starting with a dose of 300 million total organisms, gradually increased to 6000 millions. After a six-weeks' interval a second course of ten injections was given, this time commencing with 1500 and rising to 20,000 millions. During the interval four injections of 0·45 g. of N.A.B. were administered. Six weeks later, after four more injections of 0·45 g. N.A.B., a third course of T.A.B. similar to the second course was given in some cases. Half an hour after each injection a severe rigor began, the peak being reached in two hours. Herpes occurred on the fifth day. Usually the temperature dropped to normal within 12 hours of the injection. If that drop did not occur a septic focus should be searched for. The best results were obtained in grandiose and restless cases. Usually there was a return of the excitement after pyrogenic treatment had ceased, but the tendency to do impulsive acts was replaced, in the majority of the patients, by the ability to do useful work under supervision; in a few initiative returned. During each course of injections there occurred a fall in the body-weight, but it was well regained in the intervals, and muscle tone was improved. There seemed to be no direct connexion between serological changes in the blood and change in the mental and physical condition of the patient. These T.A.B. vaccine injections, however, caused remission in the course of general paralysis, and in the series under Dr. Mackenzie's observation this remission extended in some patients to two and a half years, but was as short as four months in a few. Incidentally, the treatment conferred a high degree of immunity to the typhoid group of infections, provided a six-weeks' interval elapsed between each course of fever-therapy, to guard against possible exhaustion of the antibody-producing mechanisms.

With regard to end-results, by this treatment life was prolonged; during the remission the patients were quiet and amenable, and might be able to do useful work. The question of their discharge from the mental hospital was always a difficult one, and much depended on what sort of home life they were likely to have.

Discussion.

The CHAIRMAN referred to cases at Great Ormond-street Hospital for Sick Children, showing symptoms of what was termed general paralysis of the insane, though the condition in children was difficult to diagnose owing to the absence of grandiose symptoms. Fifteen cases had had malaria treatment, all except one being congenital syphilitics. Half the number were treated by mosquito bite, the others by the injection of blood from malaria cases; the incubation period varied according to which method was employed. In children the temperature shot up at once after the injection, in contrast with the gradual rise in adults mentioned by Dr. Nicol. Dr. Nabarro was not very satisfied with the general effect of this treatment in children.

Dr. WANSEY BAYLY said that many observers regarded it as dangerous to give this treatment to advanced cases; his own view was that any risk was justifiable in an established case, since it was not of tragic moment even if death happened to be hastened.

Dr. H. M. HANSCHELL thought that every patient with general paralysis of the insane should be treated with malaria, certainly every one whose cerebro-spinal fluid was Wassermann positive. He had used T.A.B. in the way described for disseminated sclerosis eight years previously, and during the last two years for latent tertiary cases of syphilis, and had thus obtained a negative Wassermann.

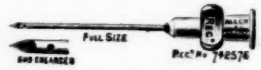
Dr. BUCKLEY SHARPE said that in children it was very difficult to be certain whether relapse had occurred, because they were so liable to chills and incidental illnesses.

Dr. NICOL and Dr. MACKENZIE briefly replied.

New Inventions.

NEW NEEDLE FOR THE INJECTION OF VARICOSE VEINS.

THE two main essentials for the successful treatment of varicose veins by the injection method are that the solution shall be brought into as close contact with the endothelium as possible and at its highest concentration. This needle has been designed for the purpose of meeting these desiderata by the direction given to the flow as it leaves the eye, which being laterally placed, permits of the solution being injected at an obtuse angle to the wall of the vein. There is less danger of the solution being injected into the wall of the vein instead of into the lumen, owing to the very short bevel and the distance from it to the eye of the needle. With an ordinary hypodermic needle this is liable to happen, especially so with a long-pointed bevel. Owing to the position of the eye, there is less likelihood of it being blocked as it penetrates the tissues to enter the vein. Finally, any direction may be given to the flow by axial rotation of the syringe. The lettering REGD. stamped on the mount should be noted, as it indicates the direction of the eye in relation to the walls of the vein, so that it is possible to make a complete ring around the wall with the sclerosing solution. This method will be found useful in treating very dilated veins. The needles are made by Messrs. Allen and Hanburys, Ltd., 48, Wigmore-street, W. 1.



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Reviews and Notices of Books.

THE ART OF SURGERY.

By H. S. SOUTTAR, D.M., M.Ch. Oxf., F.R.C.S. Eng., Surgeon, London Hospital. London: William Heinemann (Medical Books) Ltd. 1929. Pp. 624. 30*s*.

THIS book is written with the avowed object of lightening the student's labour by omitting what is not essential and by describing very fully what is fundamental. It bears little resemblance to the conventional text-book, though the general arrangement of the contents follows the usual pattern, commencing with inflammation, suppuration, tuberculosis, syphilis, gangrene, tumours, hæmorrhage, and other general surgical subjects, and proceeding to regional surgery. Apart from its arrangement the text does not resemble that of any ordinary text-book; there is a greater continuity in the method of writing, which makes for pleasant reading and there does not seem to be such a large and forbidding collection of facts to be absorbed by the reader. This effect has not been obtained by the omission of any material facts, but partly by the skill of the writer and partly by his resolve to avoid too much detail. Many text-books consist of a blend of the author's personal experience of surgery with facts obtained from other text-books or original writings, and the younger the author the more do the latter tend to predominate. Mr. Souttar has relied entirely on his own knowledge and the fruits of his wide experience. Results have justified this method; those facts which have seemed to Mr. Souttar to be of great importance are undoubtedly those which should first be absorbed by the student, who can later supplement this fundamental knowledge from the study of more advanced works or special monographs. A possible danger in a text-book by one author is the statement of only one point of view on a controversial subject, but on the whole this pitfall has been avoided by Mr. Souttar with excellent judgment. An exception is in the section on paralytic ileus and peritonitis, where Mr. Souttar omits to mention that there is a definite school of thought favouring absolute rest to the intestines. He describes only the vigorous treatment pursued by the opposing school. Similarly, his enthusiasm for gastro-enterostomy in the treatment of chronic gastric ulcer is not universally shared, while his assumption that the hopes formerly held as to the value of medical treatment have now been abandoned is certainly not in accordance with modern views.

It is difficult to select any chapter for special comment since the book is remarkably uniform in aim and value. Even to those subjects in which his previous contributions to surgical literature show him to be specially interested, Mr. Souttar gives only their just proportion of space. The section on fractures is typical. The writer of a surgical text-book is always hampered by tradition when he writes on this subject since he feels it to be his duty to deal minutely with fractures which rarely if ever occur and splints and appliances which are of historical interest only. Mr. Souttar has broken away from the traditional method, for he discusses only those fractures of each bone which are common, giving the physical signs and the points specially to be noticed. He then describes a method of treatment which has given good results in his hands and should give equally good results if proper care is taken in all cases. The number of splints recommended is small, but most surgeons will agree that it is possible to treat most fractures with those mentioned, and it is indisputable that it is better for the student to understand thoroughly the way to apply a small number of splints than to have a fragmentary knowledge of many. There is certainly no ground here for the common complaint that the chapter on fractures is the most boring part in a surgical text-book.

As would be expected, the chapters on injuries to nerves, cerebral injuries and tumours, and diseases of the œsophagus are all excellent. Especially in the surgery of the nervous system it is difficult to separate the essentials necessary for the student from the refinements required by the expert, and Mr. Souttar has drawn the dividing line with skill. Although he is well known as an inventor of ingenious surgical instruments, he makes no more than a modest passing reference to some of his inventions, in accordance with his determination to avoid any details of operative surgery. He has thereby preserved the balance of his book, but we should have liked to see an illustration of his craniotome, an instrument of the greatest mechanical beauty and precision. There should also have been some reference to the useful metal frame devised by him for the support of splints used in fractures of the lower limb. This frame is much less cumbersome than the Balkan frame. The last chapter is devoted to a short but excellent description of local and spinal anæsthesia. The general principles are stated clearly and their application in several situations fully explained. As the author points out, this method of anæsthesia is limited only by the skill and anatomical knowledge of any surgeon who has thoroughly grasped the general principles. There are two useful appendices, one concerned with the measurements of the lower limb and the mechanics of apparent lengthening and shortening, always a confusing subject, and the other with the use of radium.

The book is most attractively produced. It is a moderately large and pleasant volume which is not too heavy to hold for a long period; it stays open easily and the pages lie flat; the paper is good and not highly glazed, and the printing is from a sound type and easy to read. A conspicuous feature is the very wide margin on the outer side of each page; this has not only a decorative effect, but it has also the more important function of providing space for sub-titles and illustrations which look casual, but are original in style and peculiarly apposite to the text. They are reproduced from drawings which are admirably chosen. No explanatory legends are required, for each drawing is accurately placed next to the paragraph which it illuminates. Mr. Souttar's ideal was to provide a thumb-nail sketch for each paragraph capable of being illustrated. He has already gone far towards reaching this end and we look forward in each succeeding edition to seeing interesting sketches in the still empty margins. We have no doubts as to the success of this production.

BACTERIOLOGY.

Recent Advances in Bacteriology and the Study of the Infections. By J. HENRY DIBLE, M.B. Glasg., M.R.C.P., Professor of Pathology and Bacteriology in the Welsh National School of Medicine; late Professor of Pathology in the University of London. London: J. and A. Churchill. 1929. Pp. 363. 12*s*. 6*d*.

IT is the misfortune of bacteriology that it has been chiefly studied by medical men in its relation to diseases, especially those of human beings. It has thus been very much an applied science and has suffered in consequence. In recent years, however, there has been a greater tendency to study the organism for its own sake and not merely for its effects upon a host; bacteriology has, in fact, developed a definitely academic side. This in itself is satisfactory, but it does not lighten the work of the medical student, who has not only to keep himself abreast of the increasing knowledge of the influence of bacteria in disease, but is also expected to have some idea of the highly complicated problems of pure bacteriology. And who is to tell him how much of this academic knowledge it is necessary for him to acquire? Prof. Dible has attacked the problem with success, and has written a book which should have a wide appeal not only to students and medical practitioners who are not especially versed in bacteriology, but also to those whose knowledge is more intimate. The book is divided into 27 chapters dealing with different aspects of the subject. Some of these are

related to one another, but the arrangement seems more or less haphazard; the pneumococci, for example, are sandwiched between measles and tularæmia and the spirochætal infections. Smooth progression from chapter to chapter is, of course, impossible in a work of this kind.

One of the earlier chapters, that on the streptococcus problem, is probably the best in the book; it deals in the most comprehensive way with this important subject. The author can scarcely be blamed if the next chapter on bacterial variations is not quite so clear and good; he has done all that is possible in the present confused state of roughs and smooths, and O's and H's. An excellent chapter on the bacteriophage is followed by two others, we rejoice to see, on experimental epidemiology, and Calmette and B.C.G. The next three chapters are devoted to filterable viruses, and the most important examples of these are well surveyed, though perhaps the treatment of the infective theory of malignant disease leave something to be desired. Other chapters deal with Rickettsia bodies, measles, pneumococci, spirochætal infections, local immunity, diphtheria, and anaerobic organisms. The book is well printed and produced, but the table on pages 2 and 3 is far from easy to read.

To write single-handed a review of recent work on bacteriology is no easy task, but Prof. Dible has succeeded admirably. He has surveyed the ground with thoroughness, and has exercised excellent judgment in the presentation of conflicting views. His book will not be the least popular member of this excellent series.

THE MOTOR MECHANISM OF PLANTS.

By Sir J. C. BOSE. London: Longmans, Green and Co., Ltd. 1928. Pp. 429. With 242 text-figures. 21*s*.

THE veteran founder of the Bose Research Institute in Calcutta gives in this volume a further series of his ingenious researches, showing that all plants respond to stimulation by movements of various kinds, similar in kind to, though less in degree than, those of the special "sensitive" kinds. He also deals with the existence of a mechanism for pumping sap which is subject to peristaltic movements akin to those of the mammalian bowel. Those people, especially who in their youth learnt botany and zoology as separate subjects and not as part of a considered scheme of training in biology, will be stirred by this account of the resemblances between the animal and the vegetable kingdom.

ELEMENTARY HÆMATOLOGY.

By W. E. COOKE, M.D., Director of the Pathological Department, Royal Infirmary, Wigan. London: Charles Griffin and Co., Ltd. 1928. Pp. 100. 7*s*. 6*d*.

As its name implies this book is concerned with the elementary facts of hæmatology, which are set out in a most satisfactory way; the language is lucid and the illustrations, most of which are from microphotographs, are clear and instructive. The descriptions of the various "blood" diseases are short but full enough to give a distinct picture; the section on the purpuras is remarkably good, and may be recommended to students of the blood who have passed the elementary stage. The book should prove popular with students and with practitioners who wish to keep at least within hailing distance of modern work.

GREEK THOUGHT.

By LÉON ROBIN. London: Kegan Paul, Trench, Trübner and Co. 1928. Pp. 409. 20*s*.

Prof. Léon Robin, Professor at the Faculty of Letters of the University of Paris, contributes the latest volume to the History of Civilisation, edited by Mr. C. K. Ogden, of which some 50 volumes are now in circulation. The volume has been translated from a revised and corrected French edition by Mr. M. R. Dobie.

From the medical point of view the evolution of the scientific spirit, as developed by the Greeks and exposed by Prof. Robin, has no very direct connexion with medicine, and when we say that in this long and closely written book the allusions to Hippocrates are but two or three in number and that those are brief and indirect, it will be seen that the work must not be confused with any history of the actual practice of medicine and surgery, as it existed in the four or five centuries preceding the Christian era or in the subsequent Roman period. Prof. Robin's learned pages, however, supply a general background to such a history, for he details the story of the great schools of Greek thought, and gives pictures of the philosophers connected with them, showing the connexion of their teaching with the external circumstances of the time.

An interesting foreword is supplied by Mr. Henri Berr, in which he points out that, although Prof. Robin presents philosophy and science in their constant relationship, he draws a distinction between the history of the one and that of the other which it is not easy to recognise. This reflection is founded upon Prof. Robin's statement that the history of philosophy is philosophy, and has for the philosopher an ever-living interest, while the history of science is not science, but only the dead part of scientific effort towards truth, the effort being forgotten when the end has been reached. This would imply that the history of science can only satisfy the curiosity of the erudite, and not, like the history of philosophy, the general and deep needs of society. This view Mr. Berr controverts, for he finds that the history of science not only shows the mind adapting itself to things and man taking possession of his environment, but it makes us follow the constitution of a method intended to solve the problems which the mind sets itself, and which it formerly tried to decide first in religion and then in metaphysics. Every medical man will take this view, which, in other words, finds science to be an instrument for solving philosophic problems; and the science of medicine in its modern manifestations is increasingly being shaped in this direction, in spite of the apparent divorce of the special sciences from philosophy.

The book forms a valuable section in this important historic series, but it makes quite difficult reading. In many places readers, save those specially equipped, will find a Greek lexicon necessary in spite of the occasional translation of terms and quotations, although familiarity with the original texts quoted from is not necessary for the comprehension of the arguments, and could not be expected from any save accomplished classical scholars.

DISEASE OF THE LOCOMOTOR SYSTEM.

Differentialdiagnostik der Inneren Krankheiten des Bewegungsapparates. By Dr. ERNST FREUND, Privat Dozent in the University of Vienna; and Dr. ALBERT SIMO, Bad Schallerbach (O.-Ö.). Dresden and Leipzig: Theodor Steinkopff. 1929. Pp. 58. M.4.50.

THIS fasciculus of a larger work ("Praktische Differential-Diagnostik für Ärzte und Studierende") treats of the differential diagnosis of internal diseases of the mechanisms of movement. In the introduction it is stated that the local manifestations of general diseases such as those of the nervous system, of the metabolic system, and the endocrine glands, are often to be observed in the organs of movement. The subject matter is considered under three headings: (1) the general diseases of the apparatus of movement such as acute polyarthritis, pains, and polyarthritis without fever; (2) the spinal column and various pains and their significance and occupation neuroses; and (3) in the lower extremity, limping, swelling of the knee-joint, and pains in various regions.

It will thus be seen that this booklet is an illustrated guide to the significance of various symptoms which appear in the limbs and particularly of the diagnostic value of painful sensations. It should be useful to the student and practitioner.

THE LANCET.

LONDON: SATURDAY, FEBRUARY 9, 1929.

SPINAL ANÆSTHESIA.

THE birth of spinal anæsthesia occurred some thirty years ago when Prof. BIER, of Kiel, published the results of some experiments in which, for surgical purposes, he had introduced cocaine into the spinal canal. The method was sufficiently startling in its results to attract considerable attention. TUFFIER in France became interested, as did a number of surgeons scattered throughout the world. Soon, however, unpleasant concomitant and after-effects were observed to occur distressingly often, nor could their appearance be prevented by any precautions in technique. Spinal anæsthesia was abandoned except by a few enthusiastic workers who held strongly the conviction that in principle it was sound and must be capable of further development. Much of the difficulty lay in the fact that cocaine is a very toxic agent. When less dangerous drugs such as tropacocaine and stovaine became available interest in spinal anæsthesia was renewed. In this country valuable investigations were made in 1907 by A. E. BARKER, who was able to bring forward a series of cases where the advantages of lumbar anæsthesia were manifest. BARKER demonstrated first how a heavy anæsthetic solution could be made to assume that position in the spinal canal which was necessary so that the anæsthesia might spread to the upper abdomen. JONNESCO in 1909, by high injections, extended its use to operations upon the thorax, head, and neck. But because the physiology of the procedure was not well understood accidents still occurred which marred the brilliancy of the successful results, and led once more to a diminution of interest in the method. Hence until quite recently spinal anæsthesia occupied a very small place in the technique of most modern operating clinics, and when used at all it was reserved for operations upon the lower limbs. In the early stages of the war it was hoped that spinal anæsthesia would be of great assistance in combating the shock of serious wounds of the lower extremities, but soon it was asserted that shock was a contra-indication and another check to its popularity occurred.

It is really only since the war that attention has again been directed to the method particularly in connexion with the growing popularity of novocaine, which is the least toxic of all known local anæsthetics. Knowledge of the mode of action has accumulated, and a technique based on the use of novocaine, with the precautions which we have learnt to respect, has resulted in a striking diminution in the incidence of untoward accidents. On page 271 of this issue we publish a Hunterian lecture by Prof. C. A. PANNETT which deals with the use of spinal anæsthesia for operations upon the upper abdomen. Whilst for this purpose it is not so implicitly reliable as inhalation anæsthesia, it does promise very great advantages to the patient. It seems probable that before long spinal anæsthesia will be made as efficient and safe as general anæsthesia is to-day. The dreaded fall of blood pressure is not so much to be feared now that the mechanism of its production is known and that measures can be taken to combat it; the risk of permanent paralysis is negligible if novocaine be used and puncture takes place below the level of the cord; ocular paralyses are transient and have become progressively rarer; even the severe headache following operation is much less frequent with the modern technique, where a very fine needle is used for the injection. Inhalation anæsthesia, moreover, is not without its inconveniences. The patients who are given spinal injections are at least free from post-operative disturbances, are more comfortable in the days immediately following operation, and are immune from the late often very serious sequelæ associated with general anæsthesia. Intensive study designed towards the elaboration of a more perfect technique of spinal anæsthesia for general application is being pursued in America, where surgeons are seeking escape from the disadvantages of ether narcosis. Particularly valuable work has been done by G. P. PITKIN and F. C. MCCORMACK and H. KOSTER. This last observer has applied the technique to the whole body so that operations upon the head, neck, and upper limbs can be performed as freely as upon the lower extremities. In this he has followed LE FILLIÂTRE, who nine years ago advocated general spinal anæsthesia with cocaine. It was LE FILLIÂTRE who first introduced the method of reducing cerebro-spinal pressure before injection by removing definite volumes of cerebro-spinal fluid. His methods are drastic, consisting of the removal of 25–30 c.cm. of fluid and the forcible injection through a needle of large bore of 2·5 to 3 c.cm. of a 2 per cent. solution of cocaine hydrochloride. He was recently able[1] to report nearly 10,000 cases with only two deaths, though it must be admitted that few surgeons have been so successful and free from accident.

The development of anæsthesia by the spinal route is likely to be important. It should be emphasised, however, that caution is necessary and that inexperienced persons should study the story of failures as well as the list of successes before plunging into the spinal canal a needle of large bore filled with a highly toxic preparation. It would be unfortunate if for the third time a very valuable procedure should fall into disrepute.

CONTRIBUTIONS TO HOSPITALS.

Two interesting cases have recently occurred in which the law has indirectly discouraged the gift of money to a hospital. In the first, the firm of BOURNE and HOLLINGSWORTH was refused permission to deduct a contribution to the Middlesex Hospital as a business expense in computing profits for purpose of income-tax. The firm's claim was not unreasonable. Since 1908 it had maintained two private hostels for its women employees and one for its men. A private nurse was kept at each and a doctor attended daily, but in cases of serious illness the members of the firm's staff were sent to the hospital. The hostels cost more than £1000 a year to maintain; if the company treated all serious cases under its own arrangements without sending them to the hospital the additional cost would be more than 1000 guineas. From 1904 to 1918 the firm had subscribed annual

[1] La Presse Médicale, 1928, xxxvi., 1320.

sums of an increasing amount to the Middlesex Hospital. In 1919 and 1920 an additional 1000 guineas was given. In 1921 and subsequent years the subscription was 100 guineas; in 1926 the company added a subscription of 4000 guineas. The extra sums in 1919 and 1920 were made because it was felt that there was an accumulated liability to the hospital on account of the frequent use made of it by the firm's employees during the war. The firm took a very proper view of its responsibilities for its employees and had an understanding (though not, of course, a binding agreement) with the hospital that none of its employees would be refused admission. From the firm's point of view, therefore, the subscriptions were a quid pro quo, a proper business expense and an admissible deduction as being (under the Income Tax Act Rules) money wholly and exclusively laid out or expended for the purposes of its trade. The claim was for deduction of the sums subscribed in 1919 and 1920, and it appeared that the Commissioners of Inland Revenue had actually allowed a subscription of 50 guineas as a business expense. The Inland Revenue, however, argued that this was a concession, not a legal right; alternatively, so ran the argument, the large sums subscribed in 1919 and 1920 were not wholly and exclusively laid out for the purposes of trade in relation to those particular years, because the subscriptions were intended to make up deficiencies for previous years. The Special Commissioners held that there was no legal right to make the deduction, and Mr. Justice ROWLATT agreed with them. He remarked, however, that if the Special Commissioners had taken the opposite view of the question of fact he would not have dreamt of disturbing their decision. On a question of fact the Commissioners' decisions are hard to shake. Counsel for the firm essayed to treat the matter as one of law not of fact, by submitting that the Commissioners had misdirected themselves in law by deciding that a hospital subscription could never be an allowable deduction. This view the judge was unable to accept; the upshot is that, to the extent of the taxation upon the amount subscribed, a hospital subscriber has been penalised. Whether the firm merely decided to show gratitude for hospital services rendered or whether the arrangement could be viewed as a simple, though informal, working agreement, the result is the same.

The second case in which the gift of money to a hospital was unfortunately discouraged by the law occurred at the Liverpool Assizes on Jan. 31st. In awarding some £3000 to a man injured by a motorist's negligence, the jury recommended that, if possible, there should be a further sum of £50 paid to the Stanley Hospital where the plaintiff had had 13 weeks' treatment. Mr. Justice WRIGHT pointed out that he had no power to award damages to anyone but the plaintiff. Counsel suggested that the jury might have awarded the sum to the plaintiff to be paid to the hospital for operations performed, but the judge replied that no such condition could be imposed. Hospitals, he said, have extraordinary hardships in having to deal with injuries, often serious, sustained by members of the public after being run into by motor-cars. "There ought to be some means by which they could be reimbursed; as a rule, the costs of the hospital are not included in damages at all, and the hospital has no claim." Hospitals might, he added, send in a bill to the unfortunate sufferer, and he might include that bill in his claim for damages. "It is certainly a matter which ought to be considered by the proper authorities." The learned judge presumably meant that Parliament should be asked to pass something of the nature of a Hospitals (Payment for Treatment) Bill, to provide that where a plaintiff recovers damages for personal injuries due to negligence, such damages may include sums reasonably paid or promised to a hospital for treatment in respect of such injuries. The companies which insure motorists against third party risks might object that the Bill would impose a burden on them; but at present their policy-holders are trading on the charity of the hospitals.

CONCENTRATED ANTITOXIN.

SOON after the introduction of diphtheria antitoxin 30 years ago, medical men began to inquire whether it would not be possible to obtain antitoxic serum of higher potency so that a large dose of antitoxin could be administered in small volume, and that at the same time the incidence of "serum sickness" with its troublesome train of urticaria, malaise, and arthralgia might be lowered. Dried serum appeared to promise stability, and search was made for a reliable preparation of dry material which might be dissolved in a small volume of water when required for injection. Dried serum, however, was apt to become partly insoluble and the solution or suspension in water was not always limpid. This method of providing antitoxin has now fallen almost entirely into disuse except for isolated communities. But when E. P. PICK and his co-workers showed in 1902 that most of the antitoxin was attached to a certain easily separable fraction of the total protein in serum, the possibility of concentrating serum by discarding the useless protein arose and was welcomed by serologists. When ammonium sulphate is added to serum to about one-third the saturation point, a precipitate is formed which is insoluble in water free of salts. This "euglobulin," when redissolved in saline solution, contains practically no antitoxin; nor does albumin, which is precipitated by between half and full saturation with ammonium sulphate. The middle fraction, however, termed "pseudo-globulin," precipitated by ammonium sulphate between one-third and half saturation, and soluble in water or in saturated solution of sodium chloride, contains almost the whole of the antitoxin. The modern processes of "concentration" or purification, arising largely from the work of R. B. GIBSON and E. J. BANZHAF, are based on the application of these characteristic solubilities. The euglobulin and albumin, containing no antitoxin, are removed by fractional salt precipitation or by methods of electrodialysis, and the pseudo-globulin, rich in antitoxin, is retained. By these processes concentrated antitoxin is produced which, for each unit of protein present, contains from two to three times as much antitoxin as the original serum. The concentration per cubic centimetre obviously depends on the protein percentage in the final fluid provided. It is found that with a protein percentage higher than 20—the limit under various official regulations—the fluid is undesirably viscous. In America, for many years past, and, more recently in England, concentrated diphtheria and tetanus antitoxins have been in routine use. Concentrated or purified serum has now made its appearance in other European countries, though we understand that in Germany none of the antitoxins subject to control may be issued as serum concentrated with ammonium sulphate.

Various objections to the adoption of concentrated serum have been brought forward. During concentration, it has been said, certain curative bodies

of unknown composition are lost, and, therefore, unconcentrated serum has a more rapid and thorough influence in diphtheria than does concentrated serum containing the same number of units; moreover, doubt has been thrown on the rapidity of absorption of concentrated serum compared with natural serum. HETSCH and BIELING,[1] working with serum concentrated by evaporation, concluded that this serum was absorbed less readily than natural antitoxic serum, but the careful experiments of W. H. PARK and colleagues appear to supply strong evidence that this is not true of ordinary concentrated serum. Clinical experience in England does not confirm the objections; medical superintendents of isolation hospitals, who have had ample opportunities of comparing natural and concentrated antitoxin, have, during the past ten years, gradually transferred their favour to concentrated serum, and this is now used almost universally. The change is the more impressive in that concentrated serum formerly cost hospitals considerably more for a given number of units, and it yields far less profit to the manufacturer. The patient's interests have, however, triumphed over these objections, and the incidence of serum sickness has, by the use of concentrated antitoxin, been reduced to a fraction of what it was when unconcentrated serum was used. An objection of another kind has also been raised. TH. MADSEN, R. KRAUS,[2] and others, have questioned whether the classical Ehrlich method of titrating antitoxin units measures the real value of an antitoxic serum, and suggest that two antitoxins of equal unit value may vary widely in therapeutic potency because one may have a greater "avidity," and may therefore seize more speedily and more firmly any toxin molecules it encounters. This problem is at present the subject of inquiry by a committee of the Medical Section of the League of Nations.

The methods of concentration hitherto described apply to antitoxins designed for use in the treatment of diphtheria, tetanus, scarlet fever, dysentery (Shiga), and diseases caused by the gas-gangrene bacilli. An entirely different method of concentration consists in adding the specific antigen to an antiserum and obtaining an antigen-antibody complex which is separated by the centrifuge and then split into its two components. Thus, red blood-cells added to antiserum absorb the hæmolysin and hæmagglutinin, and may be then separated by sedimentation or spinning. By warming in appropriate alkaline or sugar solution the hæmolysin may be freed from the red cells and obtained in a solution containing a minimal amount of protein. HUNTOON in 1920 (Trans. Philadelphia Path. Soc., 1920, xxii., 75) added pneumococci to antiserum and thus linked the specific antibody to the cocci; he then centrifuged the preparation and, by treating the cocci in weak alkali, was able to detach a highly potent antibody which contained but a minute amount of nitrogen—so small that 5 c.cm. of the solution would not sensitise a guinea-pig. This achievement was acclaimed in certain quarters as a proof that antibody was not necessarily protein in constitution, but biochemists to-day do not unreservedly accept this view. In the Ramon flocculation method, the toxin added to antitoxic serum forms a union with the specific antitoxin. The floccules can be separated by spinning, a portion of the antitoxin detached from the toxin by warmth and acid, and a purified antitoxin obtained. At present this process is not apparently, we believe, economically applicable to the commercial production of antitoxin.

All proteins known may sensitise animals and produce some form of liability to anaphylactic phenomena; if, therefore, antitoxins could be prepared free of protein, presumably serum reactions and serum sickness would disappear. But unluckily this hope has not yet been realised. The promising pneumococcal antibody prepared by HUNTOON was not entirely free of the property of causing reactions. RAMON has stated[3] that his purified serum does not cause reactions; we cannot trace the publication of the details of the process of preparation and comment must therefore be reserved. It is of interest to note that the antibody to pneumonia prepared by FELTON,[4] which has also been successful in other hands (see THE LANCET, 1928, ii., 766), is obtained by a variation of these methods of concentration which are based on solubilities of the various protein fractions. New processes are likely to develop on similar lines. The keen interest of the academic biochemist in the real constitution of antitoxin, as well as the wholesome rivalry between members of the scientific staffs alike in State and in commercial serum institutes, leads to ever active attempts to improve the potency of the sera used by the practitioner in his daily work, while State control ensures their safety.

[1] Arbeiten aus dem Staatsinstitut für Exper. Therap., Frankfurt a.M. 1928, xxi., 230.
[2] Zeit. für Immunität-f., 1928, lviii., 399.
[3] La Presse Médicale, 1926, xxxiv., 323.
[4] Jour. Inf. Dis., 1928, xliii., 531.

Annotations.

"Ne quid nimis."

THE KING'S HEALTH.

THE removal of the KING to Bognor marks a definite stage in his illness, but we protest again that it is premature to speak of convalescence. There has been throughout the past week a slow but definite increase in strength, and we learn that a slight improvement has even been observed in the weight. On two occasions the KING has been allowed to sit up for a brief period when the relief to monotony was beneficial, and was appreciated by the patient. The latest official bulletin calls attention to these facts while it refers to the further employment of ray therapy. The position here is that in the choice of rays and apparatus the clinical condition of the patient has throughout been the controlling anxiety. When treatment was begun the exposure could only be made for short periods and on portions of the body in order to reduce the degree of disturbance to a minimum. The need at that time was the stimulation of parathyroid activity, the adjustment of calcium metabolism, the rectification of the leucocyte count, and the raising of the bactericidal power of the blood. The mercury-vapour lamp was judged, at this serious stage of the illness, to be the method of choice in furthering these ends, and we understand that there is reason to think that the progress which occurred during the period of the application of rays from this source was in part due to their influence. Local treatment of the wound by ultra-violet light has never been employed. The improvement now attained renders possible treatment by the carbon arc, with its more penetrating luminous rays.

OBSERVATIONS ON CRETINISM.

In the current issue of the *British Journal of Surgery* (1928–29, xvi., 370) Mr. R. Lawford Knaggs makes a further contribution to the study of bone disease by a paper on changes in the bones in cretinism. It is well known, of course, that one of the most striking symptoms of cretinism is a defect in growth, resulting in dwarfism, which is associated with underlying disturbances in bone development; the most readily recognised of these are delay in the appearance of the centres of ossification and delay in fusion of the epiphyses. No serious attempt has hitherto been made, however, to collect the contributions of different observers and correlate the clinical, pathological, and histological findings. Mr. Knaggs here discusses these matters both in relation to endemic and sporadic cretinism and to cachexia strumipriva. It appears that it is endochondral ossification which is deficient in all three types, though membranous bone formation also suffers in some degree. C. Wegelin [1] is of opinion that any difference in this respect between the three types is one of degree only, the defect being least in the endemic disease. There is, at any rate, a good deal of evidence to show that in the untreated sporadic cretin ossification is usually at a standstill, while the cartilaginous epiphyseal discs often persist throughout life. In the endemic form, on the other hand, ossification is as a rule no more than delayed and after 30 years of age the epiphyseal junctions and synchondroses are only exceptionally found open. Consequently there is a difference in the growth curves of these types, for whereas in the untreated sporadic case growth has stopped for the time being, in the endemic type, though growth is slow, it is seldom disturbed so completely. It is the condition of the long bones in the cretin which is of particular interest. Besides being much shorter than those of a normal person they are relatively shorter in proportion to the length of the trunk, though the disproportion is not so great as in achondroplasia. There are striking departures from the normal also in the skull of the cretin, especially in the sporadic variety. Its infantile character is shown by persistence of all the sutures and synchondroses, and the cartilage bones are imperfectly developed. The spine and pelvis show similar defects. Histologically, one of the chief features in the bones is a diminution in the amount of cartilage proliferation in the zones of ossification, but there are also changes in the bone-marrow, active cellular tissue being replaced by fat. The marrow changes result in a great diminution of the amount of active blood-forming tissue and are probably responsible for the anæmia so often associated with cretinism. Mr. Knaggs emphasises the importance of the marrow also in the process of ossification, for it invades the zone of preliminary calcification, absorbs the cartilage, and lays the foundation of the new medullary spaces. This invasion by the marrow is continually going on. When, however, the marrow is largely converted into fatty tissue its activity must be seriously interfered with and the growth in length of the long bones consequently more or less interrupted. It is this inefficiency of the marrow in the invasion and absorption of cartilage that some authorities, with Langhans,[2] regard as the primary factor in the disturbance of bone growth in cretinism. It would be interesting to know how far the bone defects can be made good by thyroid treatment. Judging by the satisfactory rate of growth which follows the administration of thyroid extract, especially in the sporadic cases, it seems probable that the underlying bone defects must be largely corrected, but further pathological evidence is needed before this can be definitely established. The satisfactory results of substitution therapy in the case of the sporadic cretin are well illustrated by a case reported by Dr. L. J. Witts on p. 284 of our present issue. The patient, whose mother was myxœdematous, was not treated for cretinism until she reached the age of 21, by which time the symptoms were well developed, but considerable improvement followed the administration of thyroid extract. Subsequently she developed diabetes, which was controlled by dietetic measures and insulin, and under the continued administration of thyroid extract she later became pregnant. Unfortunately, owing to an oversight, during the later months of pregnancy she did not receive any insulin and developed diabetic coma. This was satisfactorily dealt with but shortly afterwards labour began spontaneously and she was delivered of a seven to eight months' fœtus, which showed early maceration. The patient herself remained in good health. This case is of great interest because pregnancy in a cretin is comparatively rare, and pregnancy in a cretin who has diabetes—a disease also inimical to pregnancy—is possibly unique.

[1] Corresp. Blatt f. Schweiz. Ärzte, 1916, xlvi., 611.
[2] Virchows Archiv, 1897, cxlix., 155.

PREVENTION OF DISEASE IN THE ARMY IN INDIA.

Colonial administrators will find encouragement in the story of preventive medicine in the British Army in India, as told by Lieut.-Col. J. Mackenzie in recent numbers [1] of the *Journal* of the Royal Army Medical Corps. A hundred years ago the death-rate only was considered, and that was 71 per 1000 men; mere sickness was thought inevitable, and was due mainly to cholera, dysentery, enteric fever, and malaria. In 1860 the death-rate had fallen to 32·5, but in 1867 it was carried up by cholera to 37. The provision of good water-supplies got rid of cholera, and probably lessened dysentery and enteric fever, though this last came into greater prominence in the eighties when young soldiers began to come out to India. In 1887 the death-rate was 15, and there was a notable fall in hospital admissions in 1898, in which year the first bacteriologist was appointed at Army Headquarters. In 1900 the admissions for malaria were 321·1 per 1000, and the Principal Medical Officer, Bengal, was considering if mosquito nets should be supplied. Ten years later they were being privately purchased by units; otherwise antimalarial work chiefly consisted of drainage and oiling. Since 1921, and especially since 1924, great efforts have been made, and the number of cases has decreased correspondingly. In 1925 an extra £7000 was allotted to antimalarial measures, and Major M. B. H. Ritchie drew attention in the Corps journal to the old idea of Hyder Ali, Sir Henry Lawrence (1846), Parkes (1864), and Sir Ranald Martin,[2] that European troops should be kept as much as possible in the hills. This idea, christened "cold storage," was accepted, and an educational malaria film was shown to all ranks and families. In 1926 £11,000 was allotted, and £20,000 for mosquito proofing of barracks. In 1927 "cold storage" was extended, propaganda was improved, and £14,000 granted for antimalarial measures. The cases treated fell from 472·3 per 1000 in 1924 to 297·3 in 1927. The methods of to-day are, to summarise Colonel Mackenzie's statements: keeping troops in the hills when they can be spared; mosquito-proofing of barracks; fumigation of hibernating mosquitoes; propaganda, especially the Rockefeller film; personal care; nets, fans, clothing; oiling and similar measures; effective treatment of cases; and coördination under a malaria officer. The prevention of malaria was assigned as a duty to the R.A.M.C. in 1924, and the subsequent improvement has justified this decision and the heavy expenditure, for there were nearly 10,000 fewer cases in the British Army in India in 1927 than there would have been at the 1924 rate.

[1] October, November, and December, 1928.
[2] The Lancet, 1868, i., 185.

ETHER AND DUTY-FREE SPIRIT.

ALTHOUGH a few years ago there were some authorities who derided the advantages of pure ether, and indeed claimed for certain impurities the chief anæsthetic effects of the liquid themselves, to-day there is general agreement that this idea was unfounded. A large amount of good work, notably by H. H. Dale and H. King in this country and W. Storm van Leeuwen abroad, has established the fact that the purest ether is also the best anæsthetic ether. That being so, it is gratifying to know that at last it is possible for every manufacturer of ether to obtain rectified spirit duty-free for the manufacture of the anæsthetic. This desirable end has been brought about, we believe, largely through the activities of the Anæsthetics Committee set up by the Medical Research Council and the Anæsthetics Section of the Royal Society of Medicine. The result of allowing the manufacturers to get alcohol through the customs without duty should materially lessen the price of ethylic ether, and already we notice an announcement in our advertising pages showing that at least one firm has taken advantage of the opportunity to provide pure ethylic ether at the price hitherto charged for that from methylated spirit.

TYPES OF FOOT-AND-MOUTH VIRUS.

FOOT-AND-MOUTH disease has a double interest at the present time. Not only is it a constant menace to stock-breeders and the cause of serious economic loss, but it is one of the most prominent members of the group of virus diseases upon which so much attention is now concentrated. It is, in fact, the doyen of these maladies, since it was in connexion with it that Löffler and Frosch in 1908 first demonstrated the possibility of the transmission of a malady from subject to subject by body fluids deprived of visible cells or bacteria. In spite of the devotion of much time and energy to its study, very little of any moment has yet been discovered as to the nature of this disease or the method of its control. Most of the research, apart from the purely scientific question of its nature, has been concentrated on finding means to provide an effective artificial immunity to this acutely infectious disease. The problem has been the concern of many workers in different countries, and it has recently been re-stated from the French point of view by MM. H. Vallée and H. Carré [1] who, at the veterinary school of Alfort, have since 1920 continued the studies begun there in 1901 under the guidance of Roux and Nocard. The primary difficulty is to ascertain if the establishment of a true immunity is at all possible, since clinical facts and experimental investigations give very contradictory results. A factor in this confusion, perhaps the chief factor, has lately been disclosed in the discovery of the existence of different races or strains of foot-and-mouth virus which are immunologically distinct, though in other ways indistinguishable, and which do not confer any reciprocal immunity; in fact, the absence of such cross-immunity is the only criterion by which they can be distinguished from one another. The types of virus at present known are classified by Vallée and Carré as the O variety, obtained from the Department of the Oise, and the A variety, of German origin. The existence of these separate and immunologically independent strains explains many of the anomalous results previously obtained, including the occurrence of second attacks at short intervals after recovery from a first attack, and has enabled the duration of the immune period against a single strain of the virus to be effectively determined. Similar results have been obtained in other European countries and in the United States. As a result of many experiments, it seems that the immunity conferred against the O virus by an attack of the disease due to this type is of not less than a year's duration, although exceptionally second attacks and relapses occur. The O virus confers no immunity whatever against the A strain of virus, and this holds good in the opposite direction. The immunity developed against type A appears to be of somewhat shorter duration. It has been found possible to produce in the same animal a simultaneous infection with both types of virus, and as a result to procure a double immunity in the recovered animal. This procedure may point the way to the ultimate goal of a successful and lasting immunisation, although inasmuch as the active immunity which follows an attack is only of short duration, the prospect does not appear too promising. It may be noted that the results of certain efforts of Vallée and Carré to hyperimmunise animals artificially have had a directly opposite effect to that intended, and have resulted in the re-establishment of the receptive state. A third type of virus, known as type C, has recently been identified by O. Waldmann and K. Trautwein.[2] The problem of this specific virus disease is therefore one of many difficulties, not the least of which is that the investigator cannot apply ordinary bacteriological methods to its investigation.

[1] Annales de l'Institut Pasteur, 1928, xlii., 841.

EXPERIMENTAL ARTHRITIS DEFORMANS.

THE experimental pathology of chronic arthropathies has not so far led to much advance in our knowledge of the subject. Most of the work has had a bacteriological bias. Attempts to cultivate bacteria from the cavity and surrounding tissues of affected joints, and by inoculation to produce changes in the joints of animals, have not, however, yielded important results. Some observations made from an entirely different point of view give promise of yielding more fruitful results. R. Leriche and E. Brenckmann [3] found, in histological preparations of material removed from an affected joint, areas of necrosis of bone associated with areas of new cartilage and bone. They were led to formulate the hypothesis that necrotic areas of bone in the epiphysis actually provoked the laying down of new cartilage and bone. They proceeded to test this theory in animal experiments by inserting into a joint grafts of fresh bone taken from another part of the animal. Macroscopic and microscopic preparations at varying intervals after the graft had been implanted showed that a series of changes occurs with regularity. The graft quickly dies and is invaded by giant cells which slowly absorb it. About the fourth week, however, in the immediate neighbourhood of the graft, now in process of being absorbed, a rapidly growing mass of new fibrocartilage is found; this becomes penetrated by blood-vessels and later ossified. These new formations of bone and cartilage occur whether the graft is placed in the joint cavity or beneath the cartilage lining it. When the graft is fixed for 15 to 30 minutes in absolute alcohol before it is placed in the joint it is merely attacked by giant cells and absorbed; no new formation of cartilage or bone occurs. Leriche and Brenckmann have applied these results to the interpretation of the changes found in osteo-arthritis. If the phenomena occurring in these animal experiments take place also in pathological lesions of the joints in man, it seems possible that the formation of cartilage or osteocartilage in the articulations of man are consequent on necrosis in the bone or cartilage near the joint. If this is so, the source of the arthropathy is to be sought in the epiphysis, and the problem of the origin of these diseases will be reduced to finding the cause of foci of necrosis of bone and cartilage in the epiphyses. Dr. Leriche has long been interested in the normal and pathological growth of bone, and his experimental work on pathological lesions follows an exhaustive study of the problems of ossification in which with the collaboration of Dr. A. Policard, he has been engaged for more than ten years (see THE LANCET, 1928, ii., 662). His conclusions as to osteogenesis are heretical but command

[2] Berl. tierärztl. Woch., 1926, xlii., 569.
[3] La Presse Médicale, Nov. 14th, 1928, p. 1441.

respect since they are founded on very careful histological work. The investigation of the processes involved in the formation of new bone in osteo-arthritic joints may serve a double purpose in clearing up the physiology of bone growth, and will be followed with great interest.

COLONIAL VETERINARY SERVICES.

LAST July the Secretary of State for the Colonies appointed a committee to consider the best means of obtaining a high degree of efficiency in veterinary research and administration in the non-self-governing dependencies. The Colonial Office Conference had already approved the principle of the ultimate creation of a colonial scientific and research service. The report of the committee has just been published [1] and emphasises the profound importance for the health of the Empire of adequate veterinary activities. Meat- and milk-supply, the advance of agriculture, and the growth of fodder crops are all services that must depend upon the veterinary surgeon for their efficiency. His work can no longer be limited to the treatment of specific diseases or the prevention of the spread of epizoötics. Animal nutrition and genetics are of immense significance in the prevention of disease, and the collaboration of the veterinarian is essential in the solution of such problems as the trypanosomiases and virus diseases. The committee finds that the veterinary surgeon of to-day is involved in a vicious circle between the complaint that he is not scientific enough and the habit of treating him as inferior to his more scientific colleagues, so that men of high scientific training will not enter the profession. The veterinary departments of the colonies are on the whole understaffed and the standard of entrance to the service is low. There is no provision for post-graduate education; there is no research station, no system for collecting, editing, and distributing information, and no advisory authority on the larger aspects of veterinary work and research. The blame is distributed between the colonial Governments and the training and headquarters organisation of the veterinary officers. The former are responsible for inadequate interest, organisation, and financial support. The chief reform demanded of the latter is that the status and prestige of the service shall be considerably improved. The figures given in the report are sufficient to show the enormous importance of the veterinary problem, and the example of South Africa demonstrates the financial return to be obtained from expenditure on the veterinary service.

The first reform recommended starts at home, with improvements in the M.R.C.V.S. syllabus. Holders of the Natural Science Tripos or of science degrees are to be urged to enter the colonial veterinary service; students studying for the M.R.C.V.S. should be encouraged to take the B.V.Sc. or B.Sc. concurrently; and all newly appointed officers should have a special course of instruction in the peculiar problems of tropical veterinary science. A scholarship scheme is recognised as essential in order to build up the prestige of the service, although in the long run it ought to rely for recruits on its intrinsic attractions. The second line of advance is to be the provision of post-graduate courses in tropical veterinary science, including protozoology, entomology, helminthology, advanced pathology and biochemistry, animal nutrition and genetics, tropical hygiene and agriculture, and practical laboratory training. The committee recommends the establishment of a school of tropical veterinary science, modelled on the lines of the London School of Tropical Medicine, and gives detailed suggestions for its situation, curriculum, staffing, equipment, and finance. Thirdly, the report describes the advisory headquarters organisation that the committee would like to see established, to correspond with the advisory authority already existing on medical and legal matters, and with that shortly to be provided for agriculture. They suggest that an adviser on animal health to the Secretary of State for the Colonies and a consultative committee of animal health should be appointed, and that a joint body representative of agricultural and veterinary interests should be established. The duties of this official and these bodies are enumerated. Fourthly, the committee urges the organisation of research, finding that much valuable work is done under great difficulties and without possibilities of coördination. They consider that a new central research station should be established, preferably in East Africa, as a pivot for veterinary research in the colonial Empire; its staff is to consist as a minimum of a director, three senior and four junior research officers, a secretary-librarian, a recorder, a farm manager, an accountant storekeeper, an engineer, and four laboratory assistants. The report closes with a review of the colonial veterinary service as it is, and recommends the creation of a unified service including both specialists and field officers with salaries ranging from £600 to £3000 per annum. Officers are not to be limited to any particular colony, but their names are to be on a roster for service wherever required.

It will be obvious that the committee has executed its terms of reference thoroughly and painstakingly, and the report should be read with care by all who are interested in the wide problem involved. The reproach levelled at the present conditions of veterinary training should be taken to heart, not only by the authorities but also by the public, on whose goodwill—whether directly by donation or indirectly by taxation—improvement must depend. The report speaks in no measured terms of "lack of funds . . . apathy and lack of vision." The veterinary institutions visited caused "dismay at what we saw," and the contrast with those of other nations was "depressing." "Starved as they are of financial support, and cramped and confined in their activities, it is clearly impossible for the veterinary schools to give a training of the scope and quality needed. The profession must needs suffer in efficiency and prestige and consequently in the attraction it offers as a career to the youth of the country. A new policy is needed, framed on bold and comprehensive lines, supported by adequate funds, and carried through with energy and determination." The framing of the policy has been admirably done by this committee; it is to be earnestly hoped that the energy and determination will not prove lacking in those responsible for putting it into effect.

[1] Colonial Veterinary Service. H.M. Stationery Office, Adastral House, Kingsway, W.C. 1929. 9d.

INSULIN AND THE DEATH-RATE FROM DIABETES.

THOSE who are acquainted with the remarkable results achieved by insulin in individual cases cannot help wondering that its introduction into general practice should have made so little impression on the diabetes death-rate. It is true that, like all innovations in medical practice, insulin has not been universally accepted, and that it will probably be many years yet before it is promptly and effectively employed whenever diabetes does not yield to dietetic measures. There remains the undoubted fact that very many doctors are using insulin and getting results from its use, while the death-rate from diabetes tends to rise rather than to diminish. Some light on this puzzling situation is thrown by a statistical analysis published in the December *Bulletin* of the Metropolitan Life Insurance Company of New York. When the death-rates are calculated for specific age-groups, and by sexes, it is found that definite changes have taken place since 1922 when insulin was introduced. Among males the diabetes death-rate has declined steadily for all groups up to age 45. At ages 45–64 the rate has remained roughly as it was. For age 65 and over there is a definite increase. Among females the decline is limited to childhood and early adult life. "After age 55," says the report, "the increase has been practically uncontrolled." This makes a great impression on the net death-rate, since in the company's experience nearly half of the total

deaths from diabetes occur in women over 50 years of age. The general conclusion from these observations, and from reports over the U.S.A., is that the incidence of diabetes, especially in women, is definitely on the increase. Insulin does not cure the disease, but does prolong life. Consequently the gain from death in early life is offset by a loss in later years. The economic prosperity of America tends to produce more diabetes and insulin may take credit that the rising death-rate is not rising more rapidly.

SILICOSIS AMONG SANDSTONE WORKERS.

"Masons' disease" is well known to sandstone workers, and many masons are so alive to the dangers of inhaling dust that they wet the stone on which they are working. Other workers exposed to stone dust in quarries and elsewhere are less conscious of risk, but the obvious possibility of their being subject to silicosis led the Home Office and Mines Department to coöperate in an inquiry, the result of which has just been published.[1] The investigation—conducted by two medical experts—was confined to workers manipulating sandstone who were in actual employment on building sites or in builders' yards and quarries in nine selected areas. Clinical examinations were made by both doctors of 454 men; 266 radiological examinations were carried out at the nearest centre possible, and 140 samples of atmospheric dust were taken for testing. Radiography revealed fibrosis, probably silicotic, in masons, stone-dressers, quarrymen, rock-getters, and planers, and severe clinical fibrosis was found amongst the older masons, stone-dressers, and quarrymen. The mason is a skilled workman who fashions stones by hand with chisel and mallet, sometimes in a confined space; his exposure to dust is continuous and severe. Quarrymen and stone-dressers work stone in a less detailed and skilled fashion than do masons; they use the pick and maul, but usually in the open air. Rock-getters work at the stone face in open quarries, using the hammer, wedge, crowbar, and drill; their exposure to dust is not intense and their work is intermittent. Fibrosis was found clinically among the older getters and planers, but most of them had previously worked in other capacities in the stone industry. Drillers who had been long at work showed fibrosis, but quarry labourers, cranemen, and sawyers seemed to be healthy. The progress of the disease was divided into three stages. In the first nodular shadows and an increase of hilum shadow, of linear shadows and pulmonary reticulum, were to be found radiographically; and there might or might not be some impairment of working capacity. In the second stage the X ray showed an increase in the area of nodular shadows with a tendency to confluence of the nodules; and there were clinical symptoms with some degree of incapacity for work. The third stage involved total incapacity. Of the 112 cases found 90 were in the first stage, 21 in the second, and 1 in the third. The greatest number of cases occurred between the ages of 45 and 54; the disease seemed to be more common after the fortieth year of age and the twentieth of employment in the stone industry. The symptom most often complained of was dyspnœa; some of the men had coughs and a few had had hæmoptysis. Quite half of them, however, had no complaints to make. Their statements about the most dangerous kind of stone were unreliable and conflicting; they seemed apt to confuse the idea of danger to health with the degree of difficulty in working the stone. It was, however, impossible to say that any kind of sandstone or gritstone is innocuous to workmen. As the inquiry was limited to men actually at work the incidence of tuberculosis, the onset of which rapidly incapacitates, could not be estimated. Clinical examination and X ray films suggested the presence of this disease in several cases; but in all the advanced ones the picture could have been produced by silicosis alone. It was found possible to diagnose fibrosis of the lungs clinically at an earlier stage than the silicosis was shown radiologically. This recalls the similar finding in the pottery industry,[2] and stresses the importance of chest examination at regular intervals, especially of workers who have been employed for 20 or 30 years in close and continuous proximity to a fine dust-cloud produced by a steel tool from sandstone. Investigations into the dust-content of the atmosphere led to the conclusion that the action of wind in diluting and removing dust was most important. Unfortunately workers in sheds cannot always stand to windward of their own and their neighbour's work. Wetting the surface helps the "getter," but does not greatly affect the fine dust produced by a cutting tool. To be effective water must be applied directly and in considerable quantity. Steam effectually lays dust produced in drilling. Respirators were used in some districts, but were very inefficient, and the men would not always wear them.

This report gives some measure of the occupational risk to which masons are exposed, especially when they are working a closely grained sandstone with its quartz particles closely packed and cemented by secondary silica. The investigators found 112 out of the 454 men they examined affected more or less—i.e., about one in every four. South African experience teaches that for early simple silicosis after a period of ten years there will be about the same number surviving as if the original diagnosis had been simple tuberculosis. If, then, we envisage the stone-mason, spending an otherwise fairly healthy life in the open air, having one in four afflicted with tuberculosis, we get some grasp of what this dust disease—silicosis—means in fatality. The only point in its favour is that it does not generally occur until middle life. Against this risk there is little to-day which can protect the man; steam, water-spray, and exhaust draughts for removing dust are not economically practical in the stone industry. A device is receiving attention whereby the dust may be removed when pneumatic tools are being used. But the simpler method is to give up using sandstone wherever possible. Already artificial wheels are replacing grindstones in the cutlery industry; there is no reason why the modern tendency to build with reinforced concrete should not be extended, while limestones have given to London its most beautiful structures, and Hampton Court stands as an instance of what can be done with bricks. Compensation has just been awarded for silicosis occurring in the stone industry; possibly this economic influence will go far to abolish the use of sandstone, which, we may say, is far less used in other countries than it is here. Medically we cannot but hope that the sandstone industry will be "improved" in this country out of existence.

[1] Report on the Occurrence of Silicosis among Sandstone Workers. By Dr. C. L. Sutherland and Dr. S. Bryson. London: H.M. Stationery Office. 1929. 1s. 6d.

[2] Report on the Incidence of Silicosis in the Pottery Industry. H.M. Stationery Office. 1926. 1s. 6d.

FELLOWSHIP OF MEDICINE AND POST-GRADUATE MEDICAL ASSOCIATION.—On Feb. 11th Mr. Andrew Wylie will lecture on "The Difficulties Experienced in the Diagnosis of Laryngeal Diseases" at 5 P.M. at 11, Chandos-street, London, W., where, on Feb. 14th, at 4.30 P.M., Dr. Gerald Slot will lecture on Calcium Therapy. On Feb. 11th also Mr. Aubrey Goodwin will give a clinical demonstration in gynæcology at 2.30 P.M. at the Prince of Wales's General Hospital, Tottenham, and on Feb. 12th, at 6 P.M., Dr. J. E. M. Wigley will hold a clinical demonstration at St. John's Hospital, Leicester-square. On Feb. 13th, at 4 P.M., Dr. Daukes will give a demonstration on Various Types of Ulceration in the Intestinal Canal at the Wellcome Museum of Medical Science, 33, Gordon-street, W.C. On Feb. 11th a two weeks' course in gynæcology will begin at the Chelsea Hospital for Women and a four weeks' course in diseases of the skin at St. John's Hospital, Leicester-square. An intensive course will be held at the Brompton Hospital from Feb. 25th to March 2nd, and from Feb. 25th to March 9th a comprehensive morning course at the Hospital for Sick Children, Great Ormond-street. An eight weeks' course is in progress at the National Hospital, Queen-square. Further information may be obtained from the Fellowship of Medicine, 1, Wimpole-street, W.

The Clinical Interpretation of Aids to Diagnosis.

A Series of Special Articles contributed by Invitation.

XXI.—THE SIGNIFICANCE OF OCULAR TESTS.

II.—Binocular Tests.*

When one eye fixes an object the other does so too; the slightly dissimilar images which are formed on the two retinas are interpreted as a single one. This power of seeing with both eyes simultaneously is called binocular vision, and that of fusion of the two images into one the fusion faculty. In some persons binocular vision is absent or poorly developed, in which case the vision in one eye is suppressed while the other is in use.

Test for Binocular Vision.

The presence or absence of binocular vision may be ascertained by placing a red glass transmitting only red rays before one eye, and a green glass transmitting only green before the other, the patient being told to look at a test object consisting of two strips of glass, red and green, illuminated by a light behind them. If binocular vision be present both red and green will be seen, but if absent either the red or the green, according to which eye is in use, and which suppressed.

The *stereoscope* also is employed as a test for binocular vision and the fusion faculty, two dissimilar pictures being used—for example, a bird on one side and a cage on the other. A normal person will see the pictures superimposed, the bird appearing to be in the cage, but if binocular vision be absent one or other picture only (either the bird or the cage) will be seen.

The Amblyoscope.—There is evidence that in some cases of concomitant squint a certain degree of binocular vision may be present, but that suppression of one eye may take place. The amblyoscope is an instrument which has been devised for the purpose of ascertaining the presence or absence of binocular vision in squint cases.

It consists of two metal tubes joined at one extremity by a hinge, so that the angle at which they are set can be altered at will to suit the angle of the squint; by this means it can be so arranged that each eye looks straight down its corresponding tube. At the ends of the tubes dissimilar pictures, translucent, so that they can be illuminated by extraneous light, are placed—e.g., bird and cage—and the power to perceive the pictures simultaneously proves the presence of binocular vision. This instrument is also used in cases of concomitant squint to train and develop the fusion faculty, which, if present, is usually feeble and may be improved during childhood by stereoscopic exercises.

Diplopia Tests in Ocular Palsies.

When normal binocular vision is present it is necessary, in order to obtain single vision, that the image of each object directly looked at should fall upon the central fixation point, or macula, of each eye; otherwise diplopia would occur. The external ocular muscles which move the eyes are so coördinated as to secure single vision in all positions of the eyes. In cases of *paralysis* or weakness of one or more muscles of one eye this coördination is lost, and binocular diplopia (double vision) results. If they are completely paralysed the affected muscle or muscles can easily be detected by making the patient move his eyes in all directions, when actual limitation of movement of the affected eye in the direction of the paralysed muscle can be seen. But where only muscular *weakness* is present, it is often impossible to detect any abnormality in the ocular movements by direct observation, and in such cases the diplopia experienced by the patient is used subjectively to determine which eye, and which muscle, or muscles, are affected.

The patient puts on a spectacle frame in which are mounted a red and a green glass, the former in front of the right eye and the latter in front of the left. The observer stands before the patient at a distance of about one metre holding a light, which is moved in all directions in turn, the patient being told to follow it with his gaze. When the eyes are moved towards the weak muscle coördination is lost, and the image of the light seen by the patient separates into two, a red and a green, the former belonging to the right eye, and the latter to the left; this separation of the images increases the further the light is moved in that direction.

By observing the position or positions in which diplopia occurs, and the relative position of the true and false images, the affected eye and affected muscle can be determined.

Paresis of an ocular muscle points to an organic lesion affecting either muscle or nerve, and is never a hysterical condition. It is present in many diseases of the nervous system, as well as in other conditions, and if a patient complains of diplopia the elucidation of the cause of this symptom is always of great importance. Ocular paresis, though not the only cause of diplopia, is much the commonest one.

Test for Heterophoria.

The external ocular muscles are normally perfectly balanced in a state of tone, so that there is an equal pull in each direction. This normal condition, in which the eyes remain straight without effort, is known as *orthophoria*. The muscular pull may, however, be of unequal strength: for instance, the internal muscles may be stronger than the external, the external stronger than the internal, or again there may be an upward pull on one eye against a downward pull on the other. When binocular vision is absent or suppressed, so that only one eye is used at a time, there is no stimulus for the eyes to remain straight; they then take up a position of rest, and the lack of balance becomes manifest as a concomitant squint, convergent, divergent, or vertical. In the presence of normal binocular vision, on the contrary, the eyes do not squint, but are kept straight by an unconscious effort: this effort is instinctively made in order to avoid the extremely uncomfortable diplopia which would result if the eyes were allowed to squint.

This condition of latent squint is termed *heterophoria*, and it is of great importance to be able to detect its presence and to measure its amount, since the unconscious effort to keep the eyes straight may give rise to distressing subjective symptoms, such as headache, giddiness, and nausea, with perhaps occasional diplopia. These symptoms may be relieved by the wearing of suitable prisms, or in extreme cases it may even be necessary to operate on the ocular muscles in order to attain a beneficial result. In other cases, again, treatment by means of exercises may be undertaken.

A rough test for the presence of heterophoria may be made by screening one eye with a card or the hand, while the other is made to fix a finger of the other hand. The eye covered by the screen moves away into the position of rest, and if the screen be removed quickly can be seen to move back at once into the position of fixation.

Maddox Rod.—Measurement of the amount of heterophoria is commonly carried out by the use of a Maddox rod. This consists of several rods of red glass, set side by side in a circular frame which is placed in front of one eye in an ordinary pair of spectacle testing frames. If a spot of light is looked at through this system of rods it becomes a streak of light.

The patient looks at a small spot of light six metres away, and while the uncovered eye sees the spot of light as a spot, the other eye sees a red streak, into which the light is transformed by the glass cylinders. This streak differs so much in appearance from the light that the eye does not interpret it as being the same object; for this reason there is no stimulus to keep the eyes together, and the eye behind the rod takes up the position of rest, just as it would if behind an opaque screen. If no heterophoria be present the covered eye remains straight and the streak is seen to cross the light, but if the balance of the muscles is abnormal, and the covered eye has moved out of the straight position, the streak will not fall on the centre of that covered eye, and will therefore appear to be at some distance from the light.

* Part I., Monocular Tests, appeared in THE LANCET last week.

For the purpose of testing the lateral muscles the rod is placed so that the streak is vertical, while for testing the elevator and depressor muscles it is rotated into a horizontal position. The amount of deviation of the vertical streak to one side or other of the light, or in the horizontal position above or below the light, may be measured by the strength of prism which, when placed in front of one eye, is required to make the streak appear to coincide with the light—the optical effect of a prism is to alter the apparent position of objects looked at through it, so that they are displaced towards its apex. Or the deviation of the streak from the light may be measured on a scale marked in tangents, the light at which the patient is looking being in the centre of the scale. The patient is asked to say with which division of the scale the streak appears to coincide, its distance from the light giving the tangent of the angle of deviation.

Accommodation of the eyes for near vision, involving as it does the act of convergence, affects the balance of the external ocular muscles, and for this reason separate tests should be made both at six metres and at normal reading distance.

For the purpose of testing muscle balance at the latter distance special instruments have been devised for the sake of convenience, but their underlying principle is the same—viz., that of dissociating the images seen by one and the other eye, and thereby abolishing the stimulus to keep them straight.

Test for Congenital Colour-blindness.

This condition is of importance in that it is a bar to certain occupations, especially the railway and marine services. Many tests have been devised for its detection, one of the best known being the "*Holmgren's wools*" test. This consists in asking the candidate to select from a heap of coloured skeins those which match in colour certain specially chosen "confusion colour" sample skeins. Another test in common use is *Edridge Green's lantern*, into the illuminated aperture of which various coloured glasses can be placed in turn, under variable conditions of lighting, the candidate being asked to recognise these colours. Other tests consist of a series of cards on which certain patterns made up of specially arranged multicoloured discs are printed, the recognition of these patterns depending on a normal colour sense.

Estimation of Intra-ocular Tension.

The *tonometer* has been devised as an adjunct to the estimation of intra-ocular tension by means of the fingers, and the type of instrument most commonly used is the tonometer of Schiötz. Its circular concave footplate, designed to fit the cornea, is held lightly on the previously cocainised eye, the patient being in a recumbent position, and the tension of the eye is indicated by a pointer which moves along a graduated scale.

The tonometer is by no means an instrument of mathematical accuracy, and is relative rather than absolute in its readings. While it can never replace the tactile sense for the estimation of intra-ocular tension, it is of real value when used by experienced physicians in certain cases of glaucoma.

R. AFFLECK GREEVES, F.R.C.S. Eng.,
Surgeon to Moorfields Eye Hospital, Ophthalmic Surgeon to the Middlesex Hospital.

PAYING PATIENTS AT MANCHESTER.—At the annual meeting of the Manchester Royal Eye Hospital it was stated that the beds reserved for paying patients, a system begun a year ago, are "an unqualified success, and have filled a need which has been long felt." Nearly 33,000 out-patients were treated, and accident cases numbered 11,848, an average of 32 per day. Next year the Grangethorpe Orthopædic Hospital will be vacated by the British Red Cross Society, which has held it since the war, and will come into possession of the Manchester Royal Infirmary. It is suggested that it should then be used as a hospital for the middle-classes. The number of beds in the Manchester hospitals reserved for paying patients is very small, notwithstanding the large demand. Grangethorpe is in a quiet pleasantly situated spot, within easy access of the infirmary.

Special Articles.

RADIUM TREATMENT OF CANCER IN FRANCE AND BELGIUM.

A VISIT TO THE CLINICS OF PARIS AND BRUSSELS.

BY DONALD J. ARMOUR, C.M.G., M.B., F.R.C.S.,
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AND
HENRY S. SOUTTAR, C.B.E., D.M., M.CH., F.R.C.S.,
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THE treatment of cancer by radium is receiving a degree of attention rarely accorded to any therapeutic method, and it is only natural that, at the many centres at which it is being practised, technical methods should have developed in different directions. It is therefore imperative that those who wish to be familiar with the latest advances should visit the different clinics at which radium treatment is being carried out, as only in this way is it possible to gauge the value of the results which have been obtained, or to form any idea of the lines along which progress is likely to proceed. With this object we have spent some time at the centres of radium therapy in Paris and Brussels, and we feel that it may be of value to others if we now report briefly the results of our observations. In the very short time at our disposal it was obviously only possible to take in general principles and to form very broad ideas. We have, however, returned home stimulated by the brilliant work we have seen, profoundly impressed by the solid progress which is being made, and not a little touched by the warm reception with which we have met and the generous way in which every avenue has been opened to us.

Paris.

Our first visit was to the Institut du Radium (26, rue d'Ulm, Paris Ve), which practically forms the out-patient department of the Fondation Curie. Under the directorship of Prof. Regaud the Institute has made great strides and is generally recognised as holding the leading place in the world. Prof. Regaud devotes the whole of his time to the work of the Institute and of its clinical section in the rue Antoine-Chantin. He is supported by Dr. Monod and Dr. Roux-Berger, familiar names in surgery, and by a large staff of highly trained assistants. The Institute works in association with the University of Paris, but, unlike most of the Continental clinics, it is a private society and does not depend directly upon the Government. It possesses seven grammes of radium, large X ray installations of the very latest types, clinical and experimental laboratories, and every facility for the convenient and sympathetic handling of patients; it has fully equipped laboratories for animal research, and adjoining it are the physical laboratories of the Institut Curie itself. On the afternoon of our visit "consultations" were in progress under the charge of Dr. Monod, assisted by Dr. Tailhefer, and it was an interesting example of French practice that the junior surgeon carried on the consultation, whilst the senior, Dr. Monod, sat beside and only occasionally gave a word of advice.

First there came a long series of cases of carcinoma of the cervix, and here for the first time we got an impression of the extraordinary prevalence of this condition in France. Most of the cases were of long standing and had been under treatment for years, and it was easy for us to follow, from the elaborate notes which were produced, the progress of each case and to see the various forms of treatment which had been adopted. There followed a series of cases of cancer in

other regions, chiefly the breast and face. Of these perhaps the most remarkable were a series of cases of epithelioma and of rodent ulcer of the face, some still untreated, many completely cured, and a few showing small recurrences after treatment.

The consultations finished, we were shown over the whole of the Institute by Dr. Marjorie Greene of the Royal Free Hospital, who is working as an assistant at the Institute, and whose knowledge both of the Institute and of our mother tongue was a delightful surprise. We were greatly impressed by the plain efficiency of all that we saw and by the elaborate care with which the notes of every case are preserved. In every single case the removal of a fragment of any tumour for microscopic examination is the unbroken rule, and no case is admitted to the statistics of cancer in which this proof is lacking. In most instances photographic records are preserved and in every case details of treatment and of progress are recorded in the most precise manner.

Approximately half the space of the Institute is given up to an elaborate X ray installation, to which we know of no rival in this country. The advantage of being able to combine radium treatment with the very latest methods of X ray therapy is too obvious to require comment, and it is not to be wondered at that in the hands of a clinician so experienced as Prof. Regaud such striking results have been obtained. We were surprised, however, to find that little attention is paid to radium emanation, only 300 mg. of radium being devoted to its production. The contrast with the opposite tendency in English practice was striking, and this was still more the case when we found that no emanation at all was used at the other centres which we visited.

Only next in interest to the Institute of Radium itself is the Centre Anticancéreux at Villejuif (14, Avenue des Écoles), one of the southern suburbs of Paris. Over this, the chief Government centre for the suburbs of Paris, presides Prof. Roussy, professor of pathological anatomy in the University of Paris, assisted by Dr. Bertillon, Dr. Wickham, and Dr. Mme. Laborde. Commencing as a small outgrowth from a poor-law hospital this has now become the "Institut de Cancère de la Faculté de Médecine de Paris," and it will shortly be accommodated in modern buildings covering a large area, including a hospital built on the most modern lines and laboratories which will be unrivalled for their purpose.

We were met by Dr. Bertillon, who spent more than three hours in showing us the hospital as it at present exists, and all the complicated apparatus which has been evolved for radium treatment. Dr. Wickham was engaged in consultations and we had the opportunity of being present at these and of seeing the actual application of some of the methods which we shall describe later on. We shall also refer later to the organisation of which Villejuif is an important centre, and which Dr. Bertillon explained to us in some detail. For the moment we will only mention two incomparable pieces of apparatus. One was a "radium bomb," a great mass of lead weighing half a ton, so delicately poised that it could be moved in any direction with a touch, and containing 1 gramme of radium. It was very securely locked. The other was an X ray installation operating in absolute silence at a pressure of 200,000 volts. Somehow we began to have doubts about the blighting influence of Government control.

Brussels.

Brussels is unique in that it holds practically the whole of the radium supply of the world. The deposits of Haut Katanga on the Belgian Congo were only discovered in 1922, but they soon eclipsed in production all other sources of radium. From them the Radium Belge Company draws its supplies for the works at Oolen, where extraction and purification are carried out. In the form of the bromide, radium is sent to the laboratories at Brussels, where for the most part it is converted into insoluble sulphate and packed into the needles and other containers in which it finally reaches the market. There is no question at all of any shortage of the element, which can be supplied at once by the Radium Belge in almost any quantity. We ourselves saw no less than 10 grammes in the Company's safe at Brussels. Owing to the kindness of the assistant director, Monsieur Adam, we were allowed to see the laboratories and to watch the methods by which the radium is handled, and we were greatly impressed by the scientific accuracy with which every process is carried out, and by the care with which every step is controlled.

At the Institut du Radium (7, rue Wéry) we were received by Dr. Sluys, the director, and by Drs. Neuman, Coryn, and Cahen, surgeons on the staff of the Institute. Here again we were impressed by the elaborate care with which records are kept and statistics prepared, and we were not a little envious of the organisation which made this possible. From the clinical point of view we had come on a bad morning, but we saw two cases of carcinoma of the rectum which had been operated upon by Dr. Neuman, after treatment with radium. In both cases he had been able to remove what was previously an inoperable tumour and in both the result was brilliantly successful. The methods of treatment adopted in the Institute were fully explained to us and we saw many of the appliances in use. Dr. Sluys, who has transferred his skill as an artillery officer to the service of radium, is concentrating upon treatment from a distance, and he showed us a most elaborate apparatus by means of which radiations from 13 "cannons," each containing a large source of radium, can be focused with the greatest accuracy upon one centre. By a mechanism of extraordinary ingenuity this centre can be shifted with precision so as to occupy any position within the body of the patient, with the net result that an enormous dose of gamma rays can be concentrated at a series of points, although the rays themselves pass through entirely different areas of the surface of the body, and the skin is saved from what would otherwise be a destructive dose. For a description of the apparatus we must refer to Dr. Sluys's papers, but for originality in conception, ingenuity in execution, and precision of action, it could not be excelled.

Methods of Treatment.

It is evident both in France and Belgium that the line along which most progress is expected, and on which most work is being done, is in the use of gamma rays from a distance. Radium is regarded chiefly as a convenient source of these rays of short-wave length, and it is used for their production very much as if it were a special form of X ray tube. The most striking example of this was the radium bomb which we saw at Villejuif, containing one gramme of radium and destined exclusively for the production of gamma radiations. But this was only one example of the general trend of thought.

The same principle was exemplified in the many ingenious appliances which we saw for supporting tubes of radium at a fixed distance from the surface of the body. In France these appliances were for the most part made of Columbia wax, a mixture of paraffin, beeswax, and sawdust, which can be moulded easily into any form. In the case of malignant deposits in the glands of the neck, for example, a thick collar is made of wax carefully moulded to the patient's neck and shoulders, and from 1 to 3 cm. in thickness. On the outer surface of this the needles of radium are embedded, the needles themselves being platinum tubes with walls at least 0·3 mm. in thickness. The face is protected by a lead screen embedded in the wax cast. As a result the small percentage of beta rays which escape through the platinum is absorbed by the wax, as are also the secondary beta radiations which arise from the platinum itself. The net result is that the patient receives a pure gamma radiation, carefully distributed so that no portion of the skin receives a dangerous dose, whilst the glands beneath are subjected to a converging cross-fire.

In Brussels the same result was obtained in a somewhat different way. A thin case was made, exactly moulded to the contours of the body, and constructed of shavings of lime-wood glued together. On this light foundation were supported blocks of cork or of light wood so that each tube of radium was supported accurately at a distance of 5 cm. from the surface of the body. The tubes themselves were placed at approximately the same distance from one another, the whole area being so mapped out as to provide a uniform radiation to the surface, whilst again the principle of the converging cross-fire was maintained. The advantage of this system over wax was the extreme lightness of the appliance and the better ventilation provided.

The technique of needle insertion did not differ much from that practised in this country, except that it appeared to be usual to employ larger doses than are customary here. Needles containing 10 to 15 mg. of radium were not uncommon, beta rays being cut off by a platinum wall, 0·5 mm. or more in thickness. On the whole, however, the insertion of needles was not regarded with great favour, and our suggestion that operable cases of carcinoma of the breast might be treated in this way was evidently regarded as a dangerous heresy. In Brussels, however, we were told that good results had been obtained by the insertion of radium needles into the broad ligaments after a laparotomy in certain cases of cancer of the uterus, whilst we have already referred to two cases of cancer of the rectum removed after radium treatment by Dr. Neuman.

We were very much struck by the number of cases of cancer of the cervix which we saw, and the number must indeed have equalled that of all the other cases of cancer with which we met. The treatment appeared to be standardised and consisted in the insertion of a lead tube containing a large dose of radium into the cervical canal, whilst smaller amounts were packed into the lateral fornices. These were left in for five or six days and the patient was then subjected to heavy doses of deep X rays as a routine. The results appeared to be excellent, for many of the cases we saw were cured cases of long standing.

What we have said applies to general surgery, but in dermatology extensive use is being made of the direct application of radium, so that the beta rays have full effect. In Paris Dr. Paul Degrais, of the Hôpital Necker, showed us wonderful examples of the results which he has obtained in lupus, keloid scars, and angioma with surface applications of radium on varnished plaques. Most remarkable of all were several cases of huge cavernous angiomas in the face and neck in children, in which the local external application of radium had produced the most brilliant cures. From the method of application it is evident that the effect must be largely one of scarring from the action of the beta rays, although in the cases of keloid growths this will hardly explain the remarkable results which he has obtained. For rodent ulcers and epitheliomas, on the other hand, he has used large amounts of radium in heavy platinum or thick silver needles, with results maintained after several years.

Government Organisation.

The immense interest taken by the French Government in the problem of cancer is very obvious. By the kindness of M. Henri, director of the Radium Belge in Paris (54, Avenue Marceau) we were introduced to M. Géry, head of the special department of the Ministry of Health (offices, 7, rue Cambacères), devoted to this object and coördinating under its central control a series of 15 centres distributed throughout France. Each of these centres is to some extent autonomous and organises the work in its own district. Of the centres outside Paris the most important is Villejuif, which takes charge of the whole of the suburbs of Paris, and we owe to Dr. Bertillon a description of its work. At each centre is concentrated a large supply of radium and a staff who are expert in its use, whilst the patients are drawn from a series of sub-centres at which consultations are held on definite days of the week. Doctors in the surrounding districts send their cases into these sub-centres, and often accompany them in order that they may get the opinion of the expert. In this way patients are saved from useless journeys, and the central hospital from unsuitable patients, whilst the public, recognising the advantage of such a convenient arrangement, seek advice at a much earlier stage than would otherwise be the case. The clinics at the sub-centres are advertised widely by means of posters in which the word "cancer" is freely used, and stress is laid on the immense advantages of early diagnosis and treatment. We were very greatly impressed by the masterly skill shown in the organisation and the simple effectiveness of every detail. Some idea of the extent of this organisation may be gained from the adjoining table, and those who are familiar with French surgery will recognise many distinguished names among the directors of the centres. The amount of radium element available at each centre is a fair measure of its importance, and the grand total certainly furnishes food for reflection. It must be remembered that this does not include private supplies, and we were informed that the total amount of radium in France available for the treatment of cancer exceeds 50 grammes.

Regional Centres in Campaign against Cancer.

Town and address.	Director.	Grammes of radium available.
ANGERS.—Hospices Civils	Prof. Papin	1
BORDEAUX.—3, Rue Jean Burguet	Prof. Réchou	2
LYONS.—Hôtel-Dieu	Prof. Bérard	2
LILLE (to be opened shortly)		1
MARSEILLES.—9, Rue Edmond Rostand.	Prof. Reynès	1
MONTPELLIER.—Hôpital Suburbain.	Prof. Forgue	1
NANCY.—47, Rue de Strasbourg	Prof. Hoche	1
NANTES.—Hospices Civils	Prof. Gaudducheau	1
PARIS.—Hôtel-Dieu, Parvis de Notre-Dame.	Prof. Hartmann	6
Salpêtrière, 47, Bould. de l'Hôpital.	Prof. Gosset	
Hôpital Tenon, 4, Rue de la Chine.	Prof. Gernez	
Assistance Publique, 3, Avenue Victoria.	Mons. Potel	
Hôpital Necker, 151, Rue de Sèvres.	Dr. Robineau	
Saint-Antoine, 184, Fg. St-Antoine.	Dr. Lapointe	
Lariboisière, 2, Rue Ambroise Paré.	Dr. Labey	
Villejuif, 14, Avenue des Écoles.	Prof. Roussy	3
Fondation Curie, 26, Rue d'Ulm.	Prof. Regaud	7
RHEIMS.—53, Rue Simon	Dr. Baud	1
RENNES.—Pavillon Clémenceau a Pontchaillou.	Prof. Marquis	1
STRASBOURG.—Hôpital Civil Pavillon Paul Strauss.	Dr. Gunsett	2
TOULOUSE.—Hospice de la Grave, Place Lange.	Prof. Marie	1½
	Total	31½

Conclusion.

Although it must be very obvious from what we have said that France has seized radium with both hands, and that she is far ahead of us in organisation, we would not have it thought that we do not fully appreciate the splendid work which is being done in England. Our personal debt to the Radium Institute of London, to Mr. Hayward Pinch and his staff, and to our many friends in other centres, is far too great for that to be possible. Our visit has indeed convinced us that in many ways we are in advance of our Continental colleagues, and we have returned with an increased admiration for the work of our own countrymen. But we went to France and to Belgium to learn, and we have learnt a great deal about the surgical possibilities of radium. We have learnt still more of the warm hearts of our colleagues abroad, who placed their time and their resources so generously at our disposal, and we feel that we can best show our appreciation by urging our colleagues on this side to follow our example.

MEDICINE AND THE LAW.

Problems of Consolidated Legislation.

THERE are puzzles in the mechanics of law-making as well as in the substance of the law. The Food and Drugs (Adulteration) Act, 1928, consolidating and replacing the previous enactments, did not come into force till Jan. 1st, 1929. The licensee of a Wimbledon hotel was summoned last week on the charge of having sold whisky to which 9 per cent. of water had been added. The alleged offence took place in December, the charge was heard at the end of January; under which Act should the proceedings be taken? The prosecution chose the new Act, whereupon counsel for the defence objected; the 28 days within which the summons could be taken out having elapsed, it was now too late to initiate proceedings under the old Act. The magistrates ruled that the objection was valid, though Section 37 of the 1928 Act provides that samples taken under the old Act are available under the new. This latter point may be important if a case is stated for the opinion of a higher court. A year or two ago, it may be recalled, proceedings against a defendant under the Dangerous Drugs Acts were terminated abruptly in the Court of Appeal because the prosecution had relied upon the Act of 1925 and that Act was not yet then in operation.

Another misunderstanding over the consolidation of enactments occurred in the House of Commons on Jan. 30th. Regulations under the National Health Insurance Act must be laid before Parliament and may be attacked by the presentation of an address to His Majesty (by either House) within 21 days; if such an address is presented, the Regulations must be annulled. The National Health Insurance (Medical Benefit) Consolidated Regulations have come into force but were liable to attack in this fashion for the 21-day period. They consist mostly of clauses which were already part of the law, but they also embody a few new features. Mr. W. Hirst, M.P., moved an address praying for the annulment of the Regulations, but it appeared that his objection was to the old law, not to the new. He was reopening hostilities towards a provision dating back to last April under which it is forbidden to give inducements, discounts, or rebates in connexion with panel prescriptions. The coöperative societies resent this prohibition because it prevents the writing of dividends on prescriptions presented by members to the societies' drug departments. On the other side the retail chemists argue that to distribute dividends on prescriptions is to given an indirect incentive to malingering; the patient, they say, has an interest in increased prescriptions and this involves extra work for the medical practitioners; moreover, to distribute profits to coöperative society members may suggest to the Minister that the margin of profit at present allowed on health insurance prescriptions is too high and ought to be cut down. The merits of this dispute were not fully debated in the House of Commons on the recent motion, for the Speaker ruled the motion out of order. The power to pray for annulment of Regulations applies only to new Regulations laid before Parliament, not to old Regulations which are being reproduced by consolidation. The Minister pointed out that the motion could not have the desired result. If the recently laid Regulations repeal and replace Regulations made last April to the same effect, their annulment would merely revive and restore the identically similar Regulations of last April.

An Inquest without a Body.

The wisdom of our ancestors established the legal principle that there could be no coroner's inquest of death unless there were a dead body lying within the area of the coroner's jurisdiction. It might be difficult to say whether scanty remains of a human being amounted to a dead body within the Coroners Act, but coroners were often content to hold inquests upon almost any recognisable portion of a human body and occasionally, when once the inquest was opened, evidence of other portions became available. In R. *v.* Haslewood in 1926 the High Court reaffirmed the old rule that there could be no inquest unless the coroner viewed the body; if the coroner omitted this duty the proceedings were extra-judicial and void. The amending Act of 1926 permitted an inquest to be held, upon the special direction of the Secretary of State, where death is believed to have occurred within the coroner's jurisdiction and where "owing to the destruction of the body by fire or otherwise, or to the fact that the body is lying in a place from which it cannot be recovered," an inquest would not otherwise be held. Where such an inquest is held without a body, the law relating to coroners and inquests is to apply subject to any necessary modifications. The Home Secretary gave a direction under this new statutory power with regard to the supposed death of an electrical engineer named Jenkins who was believed to have travelled in the train which met with an accident at Charfield last October. No trace of his body was found. His landlady, who lived at Derby where he worked, said he left her house to catch that train to visit his mother at Milverton in Somerset. A solicitor's clerk who travelled on the train identified Jenkins from a photograph as a man who had joined the train at Derby and had said he was going to see his mother in Somerset; he left the man in a compartment alone at Birmingham. A railway official verified the issue of a week-end ticket from Derby to Taunton (near Milverton) at the proper date. Only two other pieces of evidence were before the coroner's court. One was a shoe found among the debris of the accident some weeks after the smash. It was originally brown and had turned black; his landlady gave the rather vague testimony that it looked something like the brown shoes which Jenkins used to wear. The other was the fact that there were still two bodies taken from the scene of the accident and still unidentified. Dr. Welchman Ward, of Wootten-under-Edge, said neither of these could have been Jenkins; one was obviously the body of a child, the other was that of a youth 13 or 14 years old. The jury found that Jenkins had been on the train and had been accidentally killed.

It will be noted that the inquest was not upon the unidentified bodies which had presumably been dealt with at the earlier inquiry into the death of the victims of the accident. It was, in effect, merely an inquiry whether Jenkins was alive or dead, the sort of issue which might affect a life insurance policy or would determine the question of death registration. The proceedings thus became analogous to the more expensive course of applying to the Probate Division for leave to presume the death of a person who has disappeared, when affidavits of belief of death are required. It is possible that stronger evidence of death would be necessary for one purpose than another. Supposing, for instance, the engine-driver had been criminally negligent and all the other passengers except Jenkins had nevertheless survived the accident, would the disappearance of Jenkins have amounted to proof of death sufficient to support a charge of manslaughter?

REMOVAL OF QUEEN CHARLOTTE'S HOSPITAL.—The managing committee of Queen Charlotte's Maternity Hospital has decided to remove the hospital, with the nurses' home, the post-graduate and students' college, from the Marylebone-road to a quieter site. Plans have been prepared, the approval obtained of the Ministry of Health and King Edward's Fund, and negotiations for the acquisition of a new site are proceeding. It is proposed that the buildings should comprise an isolation block for cases of puerperal fever, with space for research laboratories, with the object of attacking the problem of maternal mortality. This will be the first block to be erected. Another block is to be devoted mainly to prenatal cases. Rooms, on a comparatively extensive scale, are to be provided for paying patients of moderate means.

IRELAND.

(FROM OUR OWN CORRESPONDENT.)

Influenza in Dublin.

ALTHOUGH the medical officer of health for Dublin has thought it necessary to advise the closing of the schools for the period of a fortnight, the type of influenza in Dublin at present appears to be mild. Some cases of influenzal pneumonia are coming under treatment, but are by no means severe. Nevertheless, the disease appears to be affecting the mortality tables. In the week ending Jan. 26th the mortality in the Dublin Registration area was 23·6 per 1000 per annum, while for the four weeks ending on the same day the rate was 19·9, a rate equal to the mean for the corresponding period of the previous ten years. The deaths, 192 in number in the current week, included 6 assigned to influenza and 14 from pneumonia.

The Rotunda in Need.

The governors of the Rotunda Hospital have issued a special appeal for the sum of £20,000, which is urgently needed to carry out the improvements which are necessary to keep the hospital in the front rank of modern progress. It is many years since there was any capital expenditure on the hospital. A new operating theatre is required. The pathological laboratory is too small, and there is insufficient accommodation for the X Ray Department and for the Infant Care and Prenatal Care Departments. The main part of the present building has been in use for over 170 years, since it was built by Bartholomew Mosse, the founder and first Master of the hospital. The Rotunda was the first maternity hospital in the British Empire, and until recently was the largest. It still retains its position as the premier obstetric school, and its many contributions to the science and art of midwifery are well known. At present the hospital attends over 4000 confinements in the year. It is to be hoped that the governors will receive a generous response to their appeal, so that the hospital, under the progressive guidance of its present Master, Dr. Bethel Solomons, may continue to hold its high place.

An Unqualified Practitioner Sent to Prison.

Last week, in Dublin, Rasfara Mahare was convicted by a jury of posing as a qualified medical man without being registered, and was sentenced to two years' imprisonment—the maximum penalty for the offence—and fined the sum of money found in his possession. An advertisement in the papers had drawn the attention of the police, who acted with such promptitude that the man was only a fortnight in Dublin before he was arrested. He said that he had been practising in England for 20 years. Subsequent to his conviction the State Prosecutor stated that the police had reason to believe that the prisoner had been attempting to start the white slave traffic in Dublin. He had been known under 16 different aliases, and had been previously convicted 23 times. The prompt action of the police was commended by the judge.

British Pharmaceutical Conference.

It has been announced that the forthcoming meeting of the British Pharmaceutical Conference is to be held in Dublin this year, and will open in the Mansion House on June 24th. Invitations have been issued to 300 pharmaceutical associations in Great Britain. Arrangements are being made for attractive amusements for the visitors as well as for the work of the Congress. It is 27 years since the Conference last met in Dublin.

The Work of the Local Appointments Commission.

At its last meeting the Council of the Irish Medical Association expressed its approval of the method of making appointments under the Local Authorities (Employés) Act. This approval, in which all intelligent and honest opinion agrees, does not purport to cover all the methods adopted by the Local Appointments Commission. Some of the grievances to which candidates are subjected were discussed at a meeting of the Munster Branch of the British Medical Association held in Cork a few days earlier. It appears that a candidate for an appointment has to pay a fee of £1 to £2, and has also to pay his own travelling expenses for an interview with the Selection Board. Some of these fees are returned to unsuccessful candidates. A candidate who applies later for another appointment has to undergo the whole process and expense again. One gentleman declared that within the past year applications for positions cost him £50. This heavy taxing of candidates is all the more inexplicable in that the professional members of the Selection Board are in the habit of giving their services gratuitously. It appears to be unnecessary and irritating to summon all candidates, and not only those on a select list, to an interview. The present method is a great advance on the previous method of making appointments, but it should only be regarded as a step to the establishment of a State service with entrance by competitive examination.

SCOTLAND.

(FROM OUR OWN CORRESPONDENT.)

*Local Government (Scotland) Bill.**

MEDICALLY the new Government clauses for treatment of sick persons are by far the most important in the whole Bill. They deserve the most careful study. In essence they are really a reversion to the general power to provide "hospitals for the sick" contained in the Public Health (Scotland) Act, 1867. But, under that Act, nothing whatever was done to provide for anything but infectious diseases. In the 1897 Public Health Act provision by local authorities was restricted to infectious diseases. Now the wider conception is again established. The clauses cover at one sweep the whole problem of the treatment of sickness. It is enough to say that these comprehensive clauses, which affect the voluntary hospitals as well as the official hospitals, have the support of all those familiar with Scottish hospital problems. Any scheme to be approved under the new Act by the Department of Health must provide that all reasonable steps are taken to secure full coöperation with every voluntary hospital, university, or medical school within the area or serving it.

Aberdeen Hospital Scheme.

The new Royal Hospital for Sick Children at Aberdeen has now been formally opened by Viscountess Cowdray. This hospital, it is important to remember, is an entirely independent body. The funds for it have been collected over a period of 18 years. The war interrupted the project for a new hospital; but, fortunately, a site was available on the same campus as will ultimately contain the buildings of the "Joint Hospital Scheme." Architecturally the hospital adds to the reputation of Dr. William Kelly, A.R.S.A., whose work for the last 40 years is conspicuous among the Aberdeen public buildings. Meanwhile the fund of £400,000 for the new Royal Infirmary on the same campus is within £30,000 of completion. This is a marvellous record. It shows two things: first, that Prof. Matthew Hay's conception was on sound lines, and second, that a very widespread community is now conscious of the need for an institution with full modern equipment in association with a great teaching medical school. The Woodend Hospital, opened in 1927, will be supplemented by the more adequate new Royal

* The opening discussion on the Bill in Committee in the House of Commons is reported in our Parliamentary columns.—ED. L.

Infirmary, and Aberdeen will thus become a typical example of regional grouping of hospital institutions around a medical school. This idea is rapidly gaining ground in Scotland.

Influenza.

For the week ending Jan. 19th the notifications of acute primary pneumonia and acute influenzal pneumonia in Scotland numbered 748 and 303 respectively. This was for large burghs and populous areas only. In Glasgow alone the numbers were 554 and 220. For the week ending Jan. 26th, the corresponding figures were: pneumonia, 1175; influenzal pneumonia, 504; for Glasgow alone, 813 and 332. Notifications thus show the same relative increase as the deaths. In Glasgow for the four separate weeks ending Jan. 26th, the deaths from influenza were 14, 49, 149, and 233; for pneumonia, 59, 118, 187, and 297; for bronchitis, 39, 70, 108, and 107. Totals, 116, 253, 342, and 654. These figures indicate an epidemic expansion. The notifications are, of course, not a complete indication of the amount of influenza, as a recent visit to Glasgow convinces me. Medical men themselves have been very largely affected; but the attacks have been mild and the urgency of practice makes sufficient personal care impossible. The extreme fatigue following exertion is a very usual phenomenon. In Edinburgh influenza is also prevalent, but the exact figures are less readily available. Prevalence is, however, indicated by the fact that several public functions have been postponed and absenteeism at schools has been marked. At one public dinner, 22 apologies for absence were received. However, the weather conditions of Edinburgh, though fairly severe, have not been as detrimental as in the west.

Housing in 1928.

The full official figures for 1928 are now available. The table issued by the Department of Health presents many interesting national features as against the corresponding figures for England.

	Completed.	Under Construction.
1919 Act	25,129	—
do. (by Public Utility Societies) ..	421	—
Private Subsidy Schemes (1919) Additional Powers Act	2,324	—
Slum Clearance Schemes	8,668	2,683
1923 Act—by Local Authorities ..	4,006	—
do. —by private enterprise ..	14,502	2,378
do. —by Public Utility Societies	80	—
1924 Act—by Local Authorities ..	29,668	10,165
do. —by private enterprise ..	549	795
do. —by Public Utility Societies	77	50
Demonstration Houses	17	—
Steel houses erected on behalf of Government by Scottish National Housing Company	2,552	—
	88,013	16,071

Under the Addison scheme 25,129 houses were completed by local authorities. Houses by public utility societies numbered a trifling 421, and by private persons subsidised, 2324. Meanwhile the slum clearance schemes, entirely a local authority affair, have accounted for 8668 completions and 2683 under construction. The 1923 Act—that is, the Chamberlain Act—produced only 4006 by local authorities, but a large number by private enterprise—namely, 14,502 completed and 2378 under construction. Undoubtedly the Chamberlain Act gave a great impulse to private building. But the greatest impulse to local authorities has come from the 1924 Act—that is, the Wheatley Act—under which the local authorities have produced 29,668 houses, with 10,165 under construction. Under the same Act, private enterprise produced only 549, with 795 under construction. This is a great contrast to the working of the Chamberlain Act and the Wheatley Act in England. Taking all the Acts together, and including both the houses completed and under construction in 1928, Scotland has now 104,084. Knowing the enormous difficulties that confronted all building projects in Scotland when the Royal Commission reported in 1917, I can only regard this as marvellous progress; the pace will be steadily maintained until another 100,000 houses shall have been provided. Particular areas may be affected slightly by the phenomenal distress in the mining and iron trades; but probably this is a cause that operates adversely in England as well. It is worth remembering that the housing movement was initiated by representations from the mining areas of Lanarkshire in 1909. This led to several preliminary inquiries and surveys. The Royal Commission was not issued until 1912, and, owing to war delays, did not report until 1917. The first legislation on the report came in 1919. The Scottish Commission had stimulated England, and Dr. Addison, then Minister of Reconstruction, adopted at once the principal Scottish recommendations.

Public Health Services.

WHOOPING-COUGH.

To those in touch with the epidemic prevalence of whooping-cough it will come as no surprise to learn that since the beginning of the year there has been a definite rise in the incidence of the disease, the London County Council returns for the week ending Jan. 12th indicating that 1000 children were absent from the schools under their jurisdiction from this cause alone. That number may be compared with the similar weekly return of Dec. 8th, 1928, when 400 school-children were reported to be suffering from whooping-cough. Corroboration of the increased attack-rate will be found in the fact that on Jan. 30th of this year, in the Metropolitan Asylums Board hospitals for acute cases of infectious disease, there were 712 whooping-cough patients, or approximately 17 per cent. of the total numbers in these hospitals on that day. From these figures by themselves it is impossible to obtain more than a general idea of the true proportions of the epidemic, but it may be of interest to recall that only once has the above number been exceeded in the Board's hospitals since they were opened for the reception of whooping-cough in 1910—viz., on March 15th, 1927—when the cases of this disease under treatment numbered 789. The disease seems never to have completely disappeared during the summer months of 1928, and, as indicated by the hospital returns, there was an appreciable increase during the autumn months which, in turn, has been followed by a sharper rise in the admission rates since the beginning of this year. It is to be supposed that if the epidemic wave is following its usual course in London we are still 8–12 weeks removed from the period of maximum epidemicity, and it seems likely that a yet greater demand will be made on the resources of the hospitals. Should this coincide with an appeal for the removal of any large number of cases of influenzal pneumonia, the distribution of the available accommodation in accordance with the necessities of the situation will require considerable thought.

So far as can be observed at present whooping-cough is not showing any abnormal degree of severity in London, and this is reflected in the returns of the Registrar-General for the weeks ending Jan. 19th and 26th, in which we find 16 and 28 whooping-cough deaths respectively. It is interesting to speculate as to how far this improved figure is due to hospitalisation, a procedure which has now become current in public health work. Statistical evidence in support of this policy is very hard to come by, and is certainly not to be found even by the most intensive study of records of infectious hospitals by themselves, but no one with practical experience of this class of work can doubt that children from overcrowded, insanitary homes, during a period of stress such as that brought

about by an attack of whooping-cough, have their chances of survival enormously increased by removal to a hygienic environment. At present, so far as treatment is concerned, this is the most that can be provided for them, no specific remedy being available. Drugs without number have been recommended, but few would be so bold as to claim consistent success with any. Recently ultra-violet radiation has been extolled, but the results await confirmation, and preliminary work in this country has shown that this agent must be employed with caution lest dormant chest complications be stirred up. Abundant fresh air and careful attention to the patients' nourishment are still the principal points in the treatment, whilst broncho-pneumonia must be dealt with on general lines. For the past few years workers whose interests lie on the bacteriological and clinical sides of the infectious diseases common to this country have directed their attention mainly to the elucidation of problems opened up by the recent discoveries in diphtheria, scarlet fever, and measles. On the scientific side little that is new has appeared on the subject of whooping-cough, and a fresh reconsideration of the whole problem from the bacteriological and immunological standpoints is urgently called for.

INFLUENZA.

CLINICAL reports received from districts throughout England and Wales during the past week indicate that there is still considerable prevalence of influenza in Manchester, Oldham, Salford, Altrincham, Warrington, Wigan, Liverpool, and North-west Cheshire. Yorkshire and the rest of the North of England appear fairly free, as do the Midlands, with the exception of Derbyshire, Leicestershire, Newport (Salop), Hereford, and Coventry. It is reported from Bristol that fewer cases are occurring and the rest of the South and West of England shows no marked epidemic. The incidence in London appears to be rather sharply localised, Kilburn and Harlesden reporting large numbers of mild cases and Surbiton some incidence, while nothing noteworthy is reported elsewhere. A fair amount of the disease is occurring in Surrey and Berks. It is increasing in Cardiff, and epidemics are reported from Cwm Bran, Neath, Flint, and Denbigh.

In Glasgow the deaths reported during the week ending Feb. 2nd were 184 (a reduction of 52 on the previous week) and in Belfast there was a marked rise in the influenza mortality, the deaths numbering 105 as against 78 and 9 in the previous weeks. It was reported from the United States on Feb. 1st that influenza is decreasing in all parts. During the week ending Jan. 26th 55,000 cases were reported. The reports published by the Health Section of the League of Nations indicate no noteworthy change in the European situation. In Germany the returns for the Ortskrankenkasse indicate that the incidence is lower in Berlin, Breslau, and Leipzig, but increasing in Bremen. In Berlin the case mortality among the members was 3·3 per 1000, as compared with 2·4 in January, 1927. The only countries from which fresh reports of epidemic influenza have been received are Esthonia and Czecho-Slovakia; in both the type of the disease is mild.

INFECTIOUS DISEASE IN ENGLAND AND WALES DURING THE WEEK ENDED JAN. 26TH, 1929.

Notifications.—The following cases of infectious disease were notified during the week:—Small-pox, 239; scarlet fever, 2582; diphtheria, 1427; enteric fever, 26; pneumonia, 2422; puerperal fever, 31; puerperal pyrexia, 113; cerebro-spinal fever, 5; acute poliomyelitis, 3; acute polio-encephalitis, 1; encephalitis lethargica, 22; dysentery, 16; ophthalmia neonatorum, 94. No case of cholera, plague, or typhus fever was notified during the week.

The cases of small-pox were notified from the following 20 counties: London, 13 (of these St. Pancras 5, Wandsworth 4); Chester, 3 (Ellesmere Port and Whitby); Derby, 37 (of these Bolsover 23); Durham, 51; Essex, 11 (West Ham); Huntingdon, 1 (Norman Cross R.D.); Lancaster, 4; Leicester, 8 (County Borough); Lincoln, parts of Kesteven 5 (Stamford); Middlesex, 1 (Heston and Isleworth); Northampton, 7 (County Borough); Northumberland, 19 (of these Tynemouth, 18); Nottingham, 6 (of these Worksop (R.D., 5); Soke of Peterborough, 6; Stafford, 9 (of these Stoke-on-Trent 8); Suffolk, East, 1 (Stowmarket); Surrey, 2 (Mitcham, Wimbledon); Yorks West Riding, 33 (of these Castleford 14); Glamorgan, 10; Monmouth, 12.

The number of cases in the Infectious Hospitals of the Metropolitan Asylums Board on Jan 29th-30th was as follows: Small-pox (46 under treatment, 1 under observation); scarlet fever, 1904; diphtheria, 2095; enteric fever, 14; measles, 54; whooping-cough, 712; puerperal fever, 26 (plus 11 babies); encephalitis lethargica, 77; poliomyelitis, 4; "other diseases," 50. At St. Margaret's Hospital there were 13 babies (plus 4 mothers) with ophthalmia neonatorum.

Deaths.—In the aggregate of great towns, including London, there was no death from small-pox, 3 (1) from enteric fever, 58 (0) from measles, 10 (0) from scarlet fever, 104 (28) from whooping-cough, 58 (15) from diphtheria, 40 (7) from diarrhœa and enteritis under two years, and 321 (77) from influenza. The figures in parentheses are those for London itself.

The number of deaths from influenza during the previous eight weeks was 56, 60, 61, 69, 83, 99, 122, and 179 respectively, the rate of rise being steeper in the last two weeks. The figures for London during the previous eight weeks have been as follows: 11, 10, 9, 9, 15, 18, 34, and 39 respectively. The deaths from influenza in the week under review again occurred largely in the Midland and Northern counties: Liverpool, 43; Manchester, 23; Portsmouth, 13; Warrington, 10; West Ham, Southampton, Sheffield each 8; Birkenhead, 7; Birmingham, Wallasey, Bolton each 6. Glasgow reported 236, and Belfast 78 during the same week. The two deaths from enteric fever outside London occurred at Bolton and Barrow-in-Furness. Liverpool reported 12 deaths from measles, Cardiff 7, Birmingham 6, and Gateshead 5. Whooping-cough deaths are much more evenly distributed over the country: Liverpool reported 8, Manchester 7, Leeds 5, Birkenhead, Warrington, Bolton, and Hull each 4. Manchester reported 4 deaths from diphtheria, Liverpool 6 deaths from diarrhœa.

The number of stillbirths registered during the week was 286 (corresponding to a rate of 43 per 1000 births), including 48 in London.

Death from Small-pox.—The fatal case provisionally classified to small-pox in the returns for the week ended Jan. 12th was that of a male patient, aged 65 years, who was admitted on Jan. 7th to the Small-pox Hospital at Halifax, where he died the following day. He was suffering from lobar pneumonia (left lung) and small-pox, and Dr. Wilfrid Smith, acting medical officer of health, writes that he considers the immediate cause of death was pneumonia. Small-pox was inserted on the death certificate as an additional cause.

The Services.

ROYAL NAVAL MEDICAL SERVICE.

Surg.-Comdr. A. W. North to H.M.S. *Britannia* for cadets' duty at the R.N. Sick Quarters, Dartmouth.

ROYAL ARMY MEDICAL CORPS.

Capt. A. P. Draper to be Maj.

ARMY DENTAL CORPS.

Capt. J. S. Smith to be Maj.

TERRITORIAL ARMY.

Capt. D. R. Owen, from Active List, to be Capt.
Lt. C. E. Fenton to be Capt.
F. R. Curtis to be Lt.

INDIAN MEDICAL SERVICE.

Lt.-Cols. J. Masson and A. W. Greig retire.

Correspondence.

"Audi alteram partem."

BIOLOGICAL DIAGNOSIS OF PREGNANCY.

To the Editor of THE LANCET.

SIR,—The occasional great difficulty and importance of making the diagnosis of early pregnancy are so well recognised that any diagnostic test, that is said to be reliable, calls for serious consideration and examination. The latest such test, the Zondek-Aschheim test, promises to prove itself reliable, for the results of those who have tried it extensively indicate only a 2 per cent. incidence of error. This test, which was recently described in your columns,[1] depends on the presence of a hormone in the urine of the pregnant woman, which the original observers believe to come from the anterior lobe of the pituitary body; and any theoretical doubts, which may exist in the minds of some as to the identity of the hormone, do not affect the validity of the test. The urine is injected into immature mice, and the result depends upon changes which occur in the ovaries of the animals in the course of a few days, and which are recognisable by an expert both macroscopically and microscopically.

The only practical difficulty in the adoption of the test is the need of a suitable supply of test animals under the care of an expert. This difficulty has been overcome in Edinburgh by my colleague, Prof. F. A. E. Crew, of the Genetics and Animal Breeding Research Department, and in Mr. B. P. Wiesner, Ph.D. Vienna, a member of the staff, we have a distinguished expert with the available material. May I therefore inform the profession through your columns that in order both to test thoroughly the reliability of the Zondek-Aschheim reaction, and at the same time to be of help if possible in different cases, Prof. Crew and Dr. Wiesner are prepared and willing to employ the facilities of the department in regard to any specimen sent to it. The test is said to be valid from 14 days after the first missed menstrual period. All that is required is to send a few ounces of the patient's urine, with a covering letter containing the clinical and other data, to the Animal Breeding Research Department, King's Buildings, University of Edinburgh. It is proposed to charge a modest fee of 5*s.* in each private case, to cover the cost of the animals and other material, and this fee will enable similar tests to be made for the reduced fee of 1*s.* 6*d.* in all hospital cases referred to the department. The result of the test will be notified by post to the sender about a week after the urine is received.

The help which the test has already afforded to me in several cases in the last three months leads me to believe that in throwing their facilities open to the profession in this country Prof. Crew and Dr. Wiesner are offering us very great practical assistance, and I hope that many of my colleagues will take advantage of these arrangements.

I am, Sir, yours faithfully,

R. W. JOHNSTONE.

University New Buildings, Edinburgh, Jan. 31st, 1929.

ASTHMA RESEARCH.

To the Editor of THE LANCET.

SIR,—My letter was not an advocacy of any method of treatment—I know too little for that—but quite definitely a plea for the serious consideration of the psychological aspect of asthma in any scheme of research. I now quite accept the fact that Mr. Coke, as a biochemical expert, does not believe that psychopathology has anything to offer towards the understanding of the problem of asthma.

His defence of the "stigma" upon the neurotic, the nervous, or the neuropath (I use his terminology in humble ignorance of the clinical or pathological differences it implies) has a frankness that makes clear the danger of moral judgments as scientific or diagnostic criteria. Let me repeat his argument, substituting "asthmatic" for the words of opprobrium: "If the number of asthmatics in the world were doubled, the health of society at large and the peace of the individual at home would be very adversely affected; if it were halved, the nation would be far happier. Therefore, the asthmatic is not an element for good, and in so far as he fails to add his quota to the general happiness of the world, so far is he a nuisance, and so far do his asthmatic manifestations carry a stigma." There seems no flaw in the argument, thus presented, that does not equally apply to the original.

Mr. Coke should study "Erewhon," where he will find described a country where emotional disturbances, though classed with delinquency, were openly treated as disease, whilst physical disorders were concealed as disgraceful; measles meant imprisonment, toothache was despicable, and asthma might have led to permanent detention. This bitter sarcasm of the neurotic Samuel Butler, whose books still give pleasure to many readers, prompts the wish that he were alive to answer Mr. Coke with an argumentum ad hominem. The shade of Dr. Johnson, a sufferer from neurotic, nervous, or neuropathic obsessions and inhibitions, might find words suitable to the occasion; or we might invoke the literary aid of Thomas Carlyle, who with his sound-proof chamber was as much a nuisance as any physical invalid. The gentle Elia, with his neurotic stammer, would be too diffident for the task, but Lord Roberts might in military fashion defend the thesis that a cat phobia is as respectable as a cat asthma and equally a concern of medicine.

But the shades of these eminent neurotics might shrink before the moral disapproval of Mr. Coke and even, as many neurotics in the flesh certainly do, keep their symptoms to themselves when they scent it. He tells us that he is not totally ignorant of psychotherapy, and speaks of useful conclusions arrived at by sympathetic questions. May we try to imagine a psychopathologist "stirring up the deeper pools of memory with a long stick and grabbing the dead leaves as they come to the surface" together with a companion picture of Mr. Coke sympathetically questioning a neurotic whom he is about to stigmatise?

"When the patient said that cats gave him asthma he was disbelieved; now, by means of the skin reactions, full justification of his statement is possible." Who disbelieved him? What is Mr. Coke's attitude to the man who says that cats make him physically ill with terror? Is this sufferer to be disbelieved, despised, and stigmatised because his reaction takes a shape for which Mr. Coke cannot find a biochemical formula? Or shall we as scientific men seek whether we can learn anything from the study of these curiously related conditions?

I am, Sir, yours faithfully,

MILLAIS CULPIN.

Queen Anne-street, W., Feb. 3rd, 1929.

To the Editor of THE LANCET.

SIR,—One is inclined to agree with Mr. Frank Coke that his views on psychology are not likely to be interesting, not at the present stage of his education; but it is otherwise with his ideas about the "science of psychotherapy" of which he claims that he is not ignorant. As a practical man I for one should like to hear more of this scientific psychotherapy which is apparently founded on disbelieving the patient. "Neurotic tendencies," he says, "were wrongly imputed to the asthmatic in the past by a profession which was totally ignorant of the main causes of asthma as now recognised. When the patient

[1] THE LANCET, 1928, ii., 834.

said that cats gave him asthma, he was disbelieved." The old Adam in myself often makes me want to doubt the patient, but I should humbly suggest to Mr. Coke that the beginning of psychological knowledge is founded on believing that what the patient says is true.

Mr. Coke with his bright optimism has much contempt for the unhappy neurotic, and he gives his reasons. Here, perhaps, a book on logic will help him more than one on psychology. Every word he says of the neurotic is equally applicable to the sufferer from any illness whatsoever. I venture to parody his words with the one substitution of the word "sick" for the word "neurotic" or "nervous." Thus: "If the number of sick in the world were doubled, the health of society at large and the peace of the individual at home would be very adversely affected; if it were halved, the nation would be far happier." No one will dispute so obvious a proposition. Let us therefore add his conclusion. "Therefore, the sick man is not an element for good, and in so far as he fails to add his quota to the general happiness of the world, so far is he is a nuisance, and so far do his sick manifestations carry a stigma."

Is it a book on logic, however, or a little common charity that is wanted?

I am, Sir, yours faithfully,

T. A. ROSS.

The Cassel Hospital for Functional Nervous Disorders, Penshurst, Kent, Feb. 2nd, 1929.

VACCINATION AGAINST SMALL-POX.

To the Editor of THE LANCET.

SIR,—In your account last week (p. 231 et seq) of the recent discussion on vaccination against small-pox, I am made to say in the course of my reply that we have not got an efficient vaccine virus. What I did say was that we had not got an efficient *killed* vaccine virus and that, while further research towards the securing of a modified virus capable of yielding protection against small-pox was eminently desirable, experimental investigations hitherto conducted had given small grounds for optimism.

I am, Sir, yours faithfully,

J. C. G. LEDINGHAM.

Lister Institute, London, Feb. 4th, 1929.

To the Editor of THE LANCET.

SIR,—Referring to the discussion of the Section of Epidemiology of the Royal Society of Medicine (reported in your columns last week), I venture to doubt whether "alastrim" has been proved to be such a stable variant of small-pox as some of the speakers supposed. According to Dr. Rajchman, it made its appearance in England in 1919; but the late Dr. J. C. McVail pointed out in the Milroy Lectures for that year that two sorts of small-pox had been prevalent in England since about 1902, a severe form in London, and a milder form in the provinces. The fatality of the mild form was 6 or 7 per cent., of the severe, from 12 to 25. A very notable fall in the provincial fatality occurred in 1921, when it was only 1·4 per cent. Since that year it has dropped still lower. Is the present-day mild small-pox (alastrim) a direct descendant of Dr. McVail's mild, provincial form, or is it a later imported variant? And if alastrim is a stable variant, was Dr. McVail's mild form also a stable variant? I observe that Dr. Monckton Copeman stated that the alastrim he saw in 1903 in and about Cambridge was of a more severe type than in most of the recent outbreaks. It appears, therefore, that during the past 28 years there have been present in this country at one time or another two, if not three, varieties of mild small-pox, besides the classical, more or less severe, form.

It is interesting to note that a similar question of identity of disease has arisen during recent years in the cases of typhus and scarlet fever. Prof. Ledingham said that "he thought that sufficient consideration had not been given to the possibility that the virulent form of small-pox had been somewhere incident alongside the alastrim, but without definite transitions." I quite agree with his opinion. So far as I am aware the two forms have not, in this country, been prevalent together at the same time in the same place. It would be a crucial test for those who believe alastrim to be quite a different disease from small-pox, to place cases of each disease together in the same ward of a hospital to observe whether patients suffering from the one became infected by the other. It is stated in the *Monthly Epidemiological Reports* (Feb. 15th, 1928) issued by the League of Nations that "small-pox of severe type appeared in June, 1927, in Northern Rhodesia, where ordinarily only the mild Kaffir-pox is met with. During the first 20 weeks of 1927 140 cases with only 4 deaths were reported, giving a case mortality-rate of 2·9 per cent.; between the twenty-first and the fiftieth week of that year there were 856 cases and 170 deaths, giving a case mortality-rate of about 20 per cent."

The questions arise, was Kaffir-pox (amaas) replaced by severe small-pox or did the former change into the latter, or did the two run side by side? Perhaps the report of this discussion will be the means of eliciting information on this point. According to the latest returns small-pox has become less frequent and less severe again in Northern Rhodesia. With this history before us we should not assume that the present mild form in England may not at any time become more severe or be replaced by a more dangerous form.

I am, Sir, yours faithfully,

E. W. GOODALL.

Hemingford Abbots, Hunts, Feb. 4th, 1929.

MYOFIBROSITIS.

To the Editor of THE LANCET.

SIR,—In reply to Dr. Neave's inquiry as to the evidence which supports the view that fibrositis is really the cause of the symptoms which are usually attributed to it, the following points may be mentioned. In 1904 when Sir William Gowers[1] in a lecture on "Lumbago: its Lessons and Analogues" first suggested the use of the word "fibrositis" for the malady, he regarded it as an inflammatory lesion of the fibrous tissue but admitted that "at present we are without any direct evidence of the real nature of these affections, such as can only be furnished by microscopes and modern methods of discerning that which it reveals." This evidence was supplied soon afterwards by Prof. R. Stockman[2] who stated that "the lesion consists in inflammatory hyperplasia of the connective tissue in patches." He and Dr. C. J. Renton demonstrated that microscopic examination of nodules excised during life showed a "localised inflammation of the perimysium," in short, a fibrositis. The microphotographs which illustrate his paper show clearly this condition.

I am, Sir, yours faithfully,

Manchester, Jan. 29th, 1929. GEORGE R. MURRAY.

SUBMUCOUS RESECTION OF THE NASAL SEPTUM.

To the Editor of THE LANCET.

SIR,—I am much interested in your annotation last week (p. 244) on this operation, the most valuable in rhinology. So much sense and so much nonsense have been written concerning it that one finds extremists stating that they "have never seen any good come of the operation" and others who cannot admit failure. Recently I wrote[3] upon the Essentials

[1] Brit. Med. Jour., 1904, i., 117.
[2] Edin. Med. Jour., 1904, xv., 108.
[3] Practitioner, September, 1928.

of Septum Operations and, as I have performed over a thousand of these operations, I may claim to be entitled to an opinion and to be permitted to recapitulate briefly what I consider to be these essentials. The factors which count for success are good illumination, a skilled anæsthetist accustomed to coöperate with the operator, careful preparation of the nose, thorough operation, and an after-treatment entailing as little interference as possible. I may add that I prefer general anæsthesia as affording more freedom in operating. I have also long been accustomed to operate in the sitting or, occasionally, in the semi-recumbent position.

The greatest care of the muco-perichondrio-periosteal flap is essential, together with thorough separation and isolation of the bony cartilaginous septum. For the palatal crest I have long discarded chisel and gouge in favour of Huff's cutting forceps, which are neater, clean-cutting, and more easily controlled. Failure is often due to not removing enough of the septum, but due regard to the preservation of an anterior buttress to support the nasal bridge must be taken. Enlarged posterior ends of inferior turbinates should always be removed when present; failure to do so seriously militates against effective operation. Plugging for 24 hours is another essential, and compressed gauze, cut into suitable splints, well coated with sterilised vaseline, and carrying anterior loops of flat "French braid" for their easy removal, is best for this purpose. The absorption of moisture swells these splints and ensures effective pressure on the new septum, making sutures unnecessary. I have never seen a "flapping septum" in my cases since I used them. As regards after-treatment, nasal washes, forcible blowing through the nose to clear the passages, and other meddlesome methods are provocative of complications and disaster, and it is foolish to permit the patient to leave the nursing home before a week has elapsed.

I am strongly of opinion that if these essentials be adhered to bad results will be reduced to a minimum. At this stage of my experience I can say that such bad results as I have encountered occurred in my early days of operation. The procedure calls for experience and technique of a high order, and not even the best of us can avoid occasional failure. We can, however, take no risks, and when failure occurs in spite of every care, it will be found to lie in the non-recognition of some general condition of the patient.

I am, Sir, yours faithfully,

MACLEOD YEARSLEY.

Wimpole-street, W., Feb. 4th, 1929.

"INDUCED" COUGH IN DIAGNOSIS.

To the Editor of THE LANCET.

SIR,—Among the many instructive precepts emerging from Dr. S. Vere Pearson's address on Pitfalls in the Diagnosis of Pulmonary Tuberculosis in THE LANCET, Jan. 12th, and from the correspondence following it, I see no reference to the value of the "induced" cough. In many cases in which the sputum provided by the patient has proved negative, an "induced" cough has provided a positive one and has enabled the physician to embark confidently on the appropriate course of treatment. There are various methods by which a useful cough can be "induced," which I have so recently set out in your correspondence columns,[1] under the heading "Obtaining a Specimen of Sputum," that I need not repeat them here. Possibly such methods are frequently employed, but they have not received the attention I think they deserve, and I offer them as a small contribution towards the avoidance of pitfalls in the diagnosis of early tuberculosis of the lungs, as I have found them in early tuberculosis of the larynx.

I am, Sir, yours faithfully,

London, Jan. 28th, 1929. JAMES DUNDAS-GRANT.

[1] THE LANCET, 1928, ii., 679.

THE TREATMENT OF HÆMORRHOIDS BY INJECTION.

To the Editor of THE LANCET.

SIR,—Mr. Morley accuses me of misquoting. I therefore give the exact text of the official report which followed the proctological meeting at the Royal Society of Medicine on July 9th, 1924—i.e., the paragraph relating to the general opinion expressed on the submucous injection treatment of hæmorrhoids:—

"The general opinion, after a full discussion, was that in selected uncomplicated cases definite improvement could be promised, and in some cases permanent cure was effected, but the likelihood of recurrence in perhaps 50 per cent. of the cases indicated the necessity for periodical re-examination and further injection as required."

I fail to see in what way I misrepresented the gist of the matter in the words I used in my letter to you.

Mr. Morley does himself an injustice. I read very carefully his book on Hæmorrhoids (1923) and I find on p. 54:—

"However, my objections to all these solutions are more or less theoretical, because my results with the 20 per cent. solution of carbolic in glycerine and water have been so uniformly satisfactory that I have resisted temptation to experiment with any others, &c."

Why, then, if Mr. Morley's results were then so uniformly satisfactory do we now find him using the very weak preparation of 5 per cent. phenol in almond oil? The curious point is that on the same page (54) of his book Mr. Morley writes: "I should not feel very confident of injecting an oily solution, because, etc." But Mr. Morley in this book also expresses the opinion that a 10 per cent. solution of phenol is too weak (also p. 54); so that one feels bewildered at the various changes in Mr. Morley's opinions.

In his letter last week criticising my subsidiary article on the Treatment of Hæmorrhoids by the Galvano-cautery (*British Medical Journal*, Dec. 8th, 1928), Mr. Morley uses the words "alarming list of complications." Yet my paragraph on complications starts with the words "These, fortunately, are very rare"—and I leave to your readers to decide whether or not this is fair comment. When my statistics are published Mr. Morley may be surprised. From memory I should say that the cures, after three years and upwards, will work out at something like 99 per cent., including all cases without any selection.

I am, Sir, yours faithfully,

W. S. WHITCOMBE.

Harley-steeet, W., Feb. 4th, 1929.

ABERGELE SANATORIUM.—As a result of representations put before the Ministry of Health by a deputation from the Finance Committee of the Manchester Corporation, it now seems probable that the Manchester Corporation will get the full grant (about £14,000) towards the cost of the sanatorium erected by the corporation at Abergele. The town clerk has received a letter from the Ministry of Health stating that the Minister is disposed to think that he would be justified in proposing that such special provision should be made.

MEDICAL REUNION IN PARIS.—A medical reunion will be held in Paris from June 9th to 14th; it will be organised with the coöperation of the *Revue Médicale Française* and its contributors, and will be open to medical men and students from all countries. The constitution of the Central Committee is as follows: President, Prof. Delbet; Vice-Presidents, Prof. Sergent and Prof. Desgrez; general organiser, Prof. Balthazard; general secretary, Dr. Léon Tixier; assistant general secretary, Mr. Deval; treasurer, Dr. Léon Giroux. The meetings will be held in the Palais des Expositions, Paris (Porte de Vaugirard), where an exhibition will be organised. During the afternoons various addresses will be given. In the mornings a well-considered programme has been drawn up, which provides for attendance at practical demonstrations at the clinics of the Faculty of Medicine and in the public and private hospitals and scientific institutes. Further particulars may be obtained from Mr. Léon Tixier, 18, Rue de Verneuil, Paris (7e).

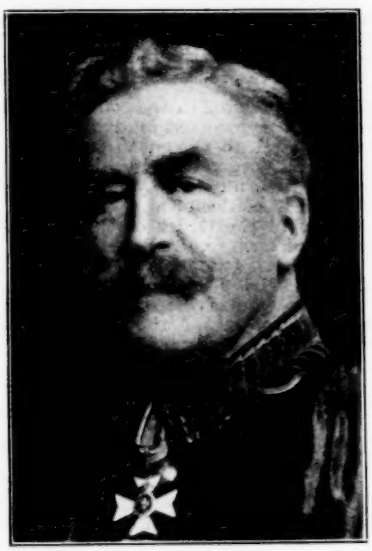
Obituary.

SIR ALEXANDER OGSTON, M.D. ABERD., K.C.V.O.,

LATE REGIUS PROFESSOR OF SURGERY IN THE UNIVERSITY OF ABERDEEN.

ON Feb. 1st the medical profession lost by the death of Sir Alexander Ogston an eminent surgeon and a veteran leader. He devoted his life to the promotion of scientific surgery, realising throughout that the medical profession, if it were to serve properly the public needs, alike in civil and military circumstances, must be properly organised, so that evolving professional knowledge could be rendered available in a prompt and orderly way.

Ogston, who was 84 years of age at the time of his death, had been living in retirement for some years. He was the eldest son of Prof. Francis Ogston, professor of forensic medicine at Aberdeen, and was educated at his home University, where he graduated M.B., C.M. in 1865, being then just short of his twenty-first birthday, while he also attended a certain number of medical courses in Glasgow. He then made a prolonged continental tour, obtaining post-graduate instruction at Paris, Vienna, and Berlin, proceeded to the degree of M.D. at Aberdeen with the shortest possible interlude, and went abroad again to follow up various studies in the leading medical schools. With such a grounding and substantial family introductions, success came rapidly to him on return to his native city, and we are reminded by what actually occurred of the all-round capacities expected of and displayed by the promising young doctors 60 years ago. Ogston's ophthalmological work in foreign clinics obtained for him almost immediately the position of ophthalmic lecturer in the University of Aberdeen; at the same time he made a promising start as a general operating surgeon; while from 1866 to 1873 he acted as assistant to his father, specialising in medical jurisprudence. Nor did this round off his energies, for from 1868 to 1872 he was joint medical officer of health for Aberdeen, in the latter year being superintendent of the Small-pox Epidemic Hospital set up in the city. In 1870, while still lecturing on ophthalmoscopy in the University, he was appointed junior surgeon at the Royal Infirmary, and four years later became full surgeon, reaching the position of senior in 1880. He was senior surgeon to the Royal Infirmary for the following 18 years, when he was appointed consulting surgeon. This extended connexion with the infirmary synchronises, it will be seen, with the enormous revolution in surgery brought about by Lister's discovery, for Ogston served his apprenticeship in those days, so often described in lurid terms, when hospital wards, despite the skill of individual surgeons, were nests of foulness. The new and fundamental knowledge came in time for those who could seize immediately upon its meaning, and Ogston began at once to display his qualities as a successful operator on modern lines, and was actually a pioneer in the pathology of septicæmia, as is shown below in Prof. Bulloch's estimate of his teacher. With the extended range of surgery made possible by the Listerian methods, Ogston became a fine operator; he specialised in bone surgery and for a long time "Ogston's Operation" was the classic procedure in genu valgum. In 1882 he was appointed Regius Professor of Surgery in the University and held this post for 27 years, retiring in June, 1909, an event which was celebrated by the presentation of public addresses and of portraits by Mr. Fiddes Watt painted, one for the University, and one for the Ogston family.



SIR ALEXANDER OGSTON.

Morgan Studios.

In the public eye Ogston was closely identified with military surgery, and for very good reason. His experience here must have been unique for one whose extensive and varied service in the field was unsupported by any special training as a military officer. His interest in the training of medical men for service in the fighting forces was unceasing, and he was acclaimed by a well-known Director-General of the Navy as "the first pioneer in dealing with the medical conditions prevailing in the Army and Navy in modern times . . . work he did without fee or reward." In his own book, entitled "Reminiscences of Three Campaigns," we have his experiences of the Franco-German War (1870–71), the Egyptian War (1884–85), and the great European War, while he also saw service in the South African War. What he saw in the first two campaigns made of him a severe critic of the existing military and naval organisations, and some of the experiences which he gathered in the last decade of his life in Serbia, and later in Italy, appeared to him to support his earlier opinions. It was particularly in the Egyptian War that he had first-hand opportunities of mastering the details of military surgery, and for his services and personal bravery he was awarded the Khedive's Bronze Star and the Egyptian war medal. He was elected member of the Committee of Medical Experts appointed by the Government in 1901 for the future organisation of the Royal Army Medical Corps, the appointment being determined by his publicly expressed opinions at the annual meeting of the British Medical Association at Portsmouth, some two years previously, on the inefficiency of the R.A.M.C. Thirteen years later, although already over 70 years of age when hostilities broke out, he made unceasing efforts to get to the front, and actually succeeded in seeing active service in Serbia, and discharging important duties with the Italian Army. His experiences, therefore, gave him a right to hold fine opinions on the right way to secure medical officers to minister to the Navy and Army, and while his great scheme for removing these officers from departmental control received no general support, many of his suggestions have been adopted.

Prof. WILLIAM BULLOCH writes:—"The announcement of the death of my old and revered teacher, Alexander Ogston, has prompted me to place on record a modern appreciation of his pioneer bacteriological work on inflammation and suppuration. It is not generally recognised that many of the current doctrines of infection and metastatic generalisation of bacteria really emanated from him. Prior to 1880 there was a condition bordering on chaos with regard to the nature of the conditions which were described as septic infection, pyæmia, and septicæmia. As late as 1879 the Pathological Society of London held a prolonged inquiry on the subject and showed that our knowledge was in the highest degree incomplete and the opinions discordant. The modern views of the relation of putridity to septicæmia were developed by Koch (1878) in his small but epoch-making book on the 'Ætiology of Traumatic Infective Diseases.' This work, written while Koch was still a practitioner

in Wollstein and far removed from academic influences, is a landmark in bacteriology. Koch's object was to determine whether infective processes in wounds were parasitic or not. He had to confine himself exclusively to animal experiments, but was able to show in a manner amounting almost to proof that a series of diseases differing clinically, anatomically, and ætiologically can be produced experimentally by the injection of putrid fluids into small animals. Koch used methods of investigation which were then new. Fluids and tissues were stained by anilin dyes and the films and sections were examined by the aid of the illuminating apparatus devised by Abbé, in combination with the admirable oil-immersion lenses made by C. Zeiss.

"The application of these methods had an enormous and lasting influence in the development of bacteriology. Although Koch's original intention was to study the infection of wounds in man, he was not in a position to do so and thus a considerable hiatus was left in his work. This hiatus was filled in an exact fashion by Alexander Ogston, at that time (1880–81) assistant surgeon in the Aberdeen Royal Infirmary. Following Koch's technique exactly, Ogston examined for bacteria over 100 abscesses, of which some were 'cold' but most were 'acute.' No micro-organisms could be found in the former, whereas in all the latter, micrococci were demonstrated and were found to be arranged either in groups like the roe of fish or in chains. He showed that this difference in appearance was due to a fundamental difference in the mode of fission. By patient hæmocytometric studies he estimated the proportion of the pus cocci to the pus corpuscles. He described and figured the occasional occurrence of bacteria other than cocci in abscesses, and described, for example, fusiform bacilli and spirochætes in alveolar abscesses long before they were noted by others. By experiments on mice Ogston then showed that pus which contained cocci could produce abscesses, and in the resulting pus he found, by means of the hæmocytometer, that the cocci had greatly increased in numbers. Pus heated or treated with phenol had no power to produce inflammation. He was therefore led to believe that the cocci were actually alive—a point which at that time was not universally accepted. Ogston made over a hundred attempts to cultivate the cocci in vitro and tried aerobic and anaerobic conditions. He ultimately succeeded best with cultures made in eggs and showed that these cultures were capable of producing abscesses in animals. From these experiments he formulated certain general conclusions. He considered that at first the cocci proliferate locally and may invade peripherally. They may even pass into the blood. In abscesses they were excluded by the formation of a deliminating wall of granulation tissue which arrested their further spread.

"In 1882 Ogston published further conclusions on 'micrococcus poisoning.' He herein emphasised the difference between the chain and group cocci. For the former he retained Billroth's name 'streptococcus,' and for the latter Ogston introduced (at the suggestion of W. D. Geddes, the professor of Greek in Aberdeen) the name staphylococcus. Ogston connected local coccal infections and spreading phlegmons ending in pyæmia and septicæmia as part and parcel of the same process and as being due to differences in degree rather than quality. He opposed the prevailing view that pyæmia and septicæmia were 'blood' diseases, and showed clearly that blood was merely the vehicle which may generalise in the body what without its aid would be only a local process. Ogston contended that pyæmia and septicæmia were the sequence of local foci of micrococcus growth and were merely the expression of the malign influences coming from this source. In his opinion the variations in the course and termination of infective processes were brought about by differences in the microbes, their virulence, the organ or structure involved, and the susceptibility of the individual affected.

"Ogston's publications, advanced and original as they were, rapidly exerted an influence on the surgical, bacteriological, and pathological teaching on inflammation and suppuration. Lister (1881) opposed some of Ogston's views, but the latter defended himself skilfully with new arguments and, as it happened, practically every word he wrote has turned out to be correct and is accepted teaching of to-day. Ogston's work on 'micrococcus poisoning' was remarkable not only from its accuracy of observation, but also from the correct interpretations which he made. As the science of pathogenic bacteria was gradually emerging between 1876 and 1886, almost nothing was done on the subject in England. France and Germany were very active and the technical methods of Koch were leading to a marvellous harvest of results. Apart from David Bruce's discovery of the agent of Malta fever, and that was of a later date, Alexander Ogston was the only worker in England who now finds a permanent place in the history of pathogenic bacteriology in its classical period. His observations and views have all passed so much into common knowledge that only his death in 1929, half a century after his work was published, serves to remind us of the man who correctly interpreted the exact ætiology of acute suppurative processes in man."

Inevitably Sir Alexander Ogston in the course of his long and distinguished career received many honours. He was Surgeon in Scotland to Queen Victoria and King Edward VII., and Surgeon-Extraordinary to the present King; he was an LL.D. of the Universities of Glasgow and Aberdeen; an ex-President of the B.M.A., a Knight of the Order of the Crown in Italy, D.L. for Aberdeenshire, and in 1912 was created K.C.V.O. He was twice married, first to Mary Jane, daughter of Mr. James Hargreave, by whom he had two sons and two daughters, and secondly to Isabella, daughter of the late James Matthews, Lord Provost of Aberdeen, by whom he had four sons and four daughters.

JOHN OWEN, M.D., F.R.C.P. LOND., D.P.H. CAMB.

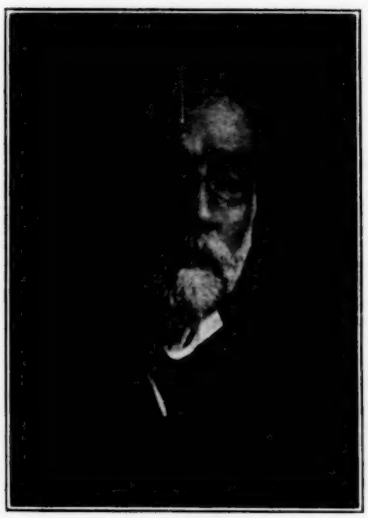
By the death of Dr. John Owen, who succumbed on Jan. 31st to an acute attack of pneumonia, Liverpool loses one of its best known physicians. Born in 1871, John Owen was educated at the Beaumaris Grammar School and at the University Colleges of Bangor and Liverpool, proceeding to Guy's Hospital for his medical training. He qualified M.B. Lond. in 1897, becoming M.D. in 1906, M.R.C.P. in 1908, and F.R.C.P. in 1923. He returned to Liverpool on qualification to a post at the Royal Southern Hospital and then started in general practice, but on the outbreak of the South African War he joined the staff of the Portsmouth Military Hospital as civil surgeon and later served in South Africa. On his return he held a post as medical officer to St. Pancras Dispensary before returning to Liverpool as consulting physician. He became attached in an honorary capacity to various hospitals and institutions, including the Liverpool Royal Infirmary; the Home for Epileptics, Maghull; the Eye and Ear Hospital, Liverpool; Southport Infirmary; and the Liverpool Hospital for Consumption and Stanley Hospital, and was at one time physician and pathologist to the Northern Hospital. He was also lecturer in clinical medicine at Liverpool University. Dr. Owen served in India and Mesopotamia during the Great War, retiring with the rank of Major in the R.A.M.C. Territorial Force and the Territorial Decoration. He was as renowned as a physician as he was liked as a man. His sympathy with patients and steadfast loyalty to his colleagues endeared him to all who knew him. He was interested in neurology as well as in the heart and lung, and was keen to detect unusual symptoms and to appreciate diagnostic points. His death will be regretted by all who came under his influence at the Liverpool Medical School and elsewhere.

FRANCIS DE HAVILLAND HALL, M.D., F.R.C.P. LOND.,

CONSULTING PHYSICIAN TO THE WESTMINSTER HOSPITAL.

WE announced last week the death, after a short attack of pneumonia, of Dr. Francis de Havilland Hall, which occurred at his house at Twickenham on Sunday, Jan. 27th, in his eighty-third year.

Few physicians in London were better known to his colleagues throughout an extended period of consulting practice than de Havilland Hall. He was born in Hatfield on April 10th, 1847, the son of Dr. W. Hall, and after general education at Bruce Castle School, Tottenham, received his medical training at St. Bartholomew's Hospital. He qualified as M.R.C.S. Eng. and L.S.A. Lond. in 1868—the usual double qualifications at that date—and graduated in medicine in the University of London in the following year. At St. Bartholomew's Hospital he held the regular residential posts, and was then appointed casualty physician, being also elected assistant physician to the Metropolitan Dispensary. For a brief time he went into general practice, but at this point his association with Westminster Hospital started, and continued for over 40 years. In 1876 he was elected medical registrar at the institution, and almost immediately afterwards assistant physician in charge of the throat department, his contemporaries being, among others, Octavius Sturges, William Allchin, J. B. Potter, and Bryan Donkin. The result of his laryngeal work was evidenced by a short volume which he published in 1878 entitled a "Synopsis of the Diseases of the Larynx, Lungs, and Heart," but Hall was not only a specialist. In one direction, in particular, he displayed his all-round capacity—namely, by his work in connexion with life assurance. He became medical officer to the Law Union and, later, to the Rock Insurance Companies, and was particularly conversant with the special and general problems presented by this side of medicine. He served as President of the Assurance Medical Officers' Association, and throughout his long professional career was regarded rightly as an authority upon the principles of life assurance, while his manual entitled "The Medical Examination for Life Assurance" ran through three editions. His other writings were mainly the outcome of his charge at Westminster of the throat department of the hospital, for he contributed articles on diseases of the larynx and nose to Fowler's "Dictionary of Practical Medicine," and those on diseases of the nose and throat to Allbutt's "System of Medicine"; but he wrote upon diseases of the mediastinum in the "Encyclopædia Medica," and on diseases of the pleura and mediastinum in Allchin's "Manual of Medicine." All these contributions to medical literature were valuable because they were based upon long personal observation, but his work on the larynx and throat formed his principal claims to attention, and he was one of the original members of the old Laryngological Society. He served for no less than 20 years as assistant physician to the hospital, becoming full physician in 1896 and consulting physician in 1912.



DR. DE HAVILLAND HALL.

Elliott and Fry.

De Havilland Hall's association with the Royal College of Physicians of London was a close one. He obtained the M.R.C.P. while still at St. Bartholomew's Hospital, was elected F.R.C.P. in 1881, was Censor from 1908 till 1911, was an examiner in medicine for the licentiateship, and in 1913 delivered the Lumleian lectures when he took as his subject intrathoracic aneurysm. The lectures, which were published in THE LANCET, formed a scholarly and comprehensive history of the disease up to the date of delivery, and were based alike upon his own work and an evaluation of that of his predecessors and colleagues.

Mr. W. MCADAM ECCLES writes: "My friendship with Dr. de Havilland Hall was enhanced by mutual association with insurance problems. His opinion thereon was eagerly sought for, and almost universally acted upon. His long connexion with the Rock Insurance Company, and afterwards the Law Union and Rock, entitled his conclusions upon difficult questions to be listened to with respect. It was in connexion with the Life Assurance Medical Officers' Association (which later became the Assurance Medical Society) that he specially shone. He had read various papers before the Society, and seldom missed a meeting, generally adding considerable zest to the discussions by his cogent remarks upon the matter under review. In 1912 he was elected President of the Society, holding office for two years with great grace and energy. Some of the remarks which have fallen from him are almost in the nature of epigrams, and are worthy of quotation:—

> I have never been able to explain why so many of these obese people do not seem to be large eaters. I suppose really their digestive system is so thoroughly efficient that they assimilate all the nourishment they take, whereas lean people perhaps have not the same powers of assimilation.

> In the case of ——, who was operated on for chronic appendicitis, calcified mesenteric glands were found. His abdominal "Stonehenge" was doubtless due to old tuberculosis, but he has since remained in good health.

> I would insist on the use of the sphygmomanometer "in all applicants above the age of 50" (1912); now (1921) I should say over 40.

Mr. WALTER SPENCER, in an appreciation of a senior colleague, comments upon de Havilland Hall's long service at Westminster as an out-patient physician. "In consequence," he writes, "de Havilland Hall was led to adopt what became characteristic of his teaching—precise detail as to medical treatment and prescribing, categorical instruction after the manner an examinee must answer questions, various modifications of hospital practice necessary in private practice. Continued later in the wards, this system of teaching, in particular to students having general practice in view, by a physician of experience, was more beneficial than is such instruction in tutorial classes by junior colleagues. . . . Until he became full physician he conducted the laryngological department and with his close friends, Butlin and Felix Semon, was one of the founders of the Laryngological Society. He wrote a popular text-book, 'Diseases of the Nose and Throat,' and when a new edition was called for Mr. Herbert Tilley joined him and added much on surgery. The loss of de Havilland Hall from the consulting staff of Westminster Hospital, following immediately upon that of Mr. William Wroughton from the committee, has removed the last of the personnel as it existed when I was appointed 42 years ago—Hall kept up a continuous intimacy with many members of the St. Bartholomew's staff and I owed much to him for the introduction he gave me on my election. Throughout our time together we corresponded, physician with surgeon. He was quick in

coming to a diagnosis that a case would be benefited by medical treatment. Alternatively he was prompt and on very many occasions gave me the opportunity of operating early. His optimistic temperament had in recent years great trials. Chronic diabetes had to be kept in check and his personal tendency to abstemiousness both as to food and drink had to be yet more rigidly observed. Then came personal anxieties during the war, and then the sudden death of his special friend, Frederick Palmer, deprived him of the companion of his weekly walks. Finally, malum coxæ senile gave him much pain. When last we met, about a month ago in the board room, he with two sticks, hardly able to hobble a hundred yards, was still his cheerful self, reminiscent, and hopeful that the pain was passing off."

Dr. LINA POTTER, the daughter of Dr. de Havilland Hall's late colleague and intimate friend, writes: "Looking back on the man one feels that the keynote of his personality was size—he was large in mind as in his tall loose-made frame, and he was large in his appreciation, being easily noted in a crowded meeting for his hearty laugh and cheery bearing. He never said an unkind thing, an attitude due to no restraint of tongue but to the fact that he never had an unkind thing to record."

These excerpts from communications which we have received give a good picture of a man to be admired and regretted, and two directions may be mentioned in which he showed his great kindness, his love of his profession, and deep sympathy with his fellow practitioners. He was the President of the Society for the Relief of Widows and Orphans, and as a medical man was deeply interested in the prosperity of the Society and assiduous in bringing its advantages before his colleagues. He was also for 25 years on the Council of Epsom College, vice-chairman for three years, a regular attendant at the meetings, and until a few weeks ago was chairman of the selection committee for ten years. No voice was listened to at the Council with more respect than his, for his judgments were those of a fair but absolutely generous man.

Dr. de Havilland Hall married Amy Margaret, daughter of Apsley Smith, of Rusthall, Tunbridge Wells, and is survived by his widow, one son, and three daughters.

JOHN EDWIN EDDISON, M.D. EDIN., D.SC.

By the death of Dr. Eddison, which took place at Cuckfield, Sussex, after 20 years' retirement from active practice, there passes one of the older generation of Leeds consultants who for many years took a leading position in the professional and intellectual life of the city of his birth.

John Edwin Eddison was born in 1842 at Headingley, the son of a well-known solicitor in Leeds. He received his medical edication at the University of Edinburgh, where he was greatly impressed by the thorough clinical teaching of Hughes Bennett and George Balfour. He graduated in 1864, taking the M.R.C.S. Eng. in the same year. He then studied in London and, for some little time both in Paris and in Vienna, before beginning practice in Leeds. From the first his aim was to be a consulting physician, and he got his chance towards the end of the seventies when Charles Chadwick, who was at that time senior physician to the General Infirmary, resigned, and Eddison was appointed to the staff, becoming junior colleague to J. D. Heaton and Clifford Allbutt. Some of the other medical charities of Leeds also had the benefit of his services; he was physician to the Public Dispensary, to the Women and Children's Hospital, and to the "House of Recovery," one of the first fever hospitals to be opened in this country, where diseases such as typhus and relapsing fever, now almost extinct, came under his notice frequently.

Eddison served the General Infirmary as physician for 21 years. Until 1884, when assistant physicians were appointed, he worked not only in the wards but in the out-patient rooms. He was keenly interested in the welfare of the school of medicine and took a large share in the teaching of the students. Dr. Wardrop Griffith, who followed him in both capacities, writes that Eddison's ward-teaching was always stimulating and suggestive if somewhat lacking in didactic qualities. Thus the men who got most benefit from being associated with him were the senior students, and especially those who had the pleasure of working under him as resident officers. "From some four years' intimate relationship with him I can testify that he was one of the pleasantest men with whom to work: he always gave one credit for doing one's best, and in this way he really did get the best out of his subordinates, who will always bear him in affectionate remembrance."

Eddison's intimate association with medical education in Leeds cannot be properly understood without some reference to the various stages in the development of the University. Although some lectures on medical and surgical subjects had been given in connexion with the infirmary (which was founded in 1767), the Leeds School of Medicine was founded in the year 1831 by the first William Hey, a pupil of John Hunter's, and the most outstanding personality in the history of the school. When the Yorkshire College of Science, which was founded in the very early seventies, enlarged its scope of work by inaugurating chairs in the humanities, an arrangement was made with the new college for medical students to get their pre-medical instruction there. In 1884 a more complete amalgamation between the two bodies took place and the way was paved for the Yorkshire College (which had now dropped its limiting title of "of Science") to affiliate with the Victoria University as one of its three constituent colleges. Dr. Eddison was appointed the first professor of medicine under the new régime. When in 1924 the University of Leeds (now becoming autonomous) celebrated its coming-of-age, Dr. Eddison was awarded the honorary degree of Doctor of Science.

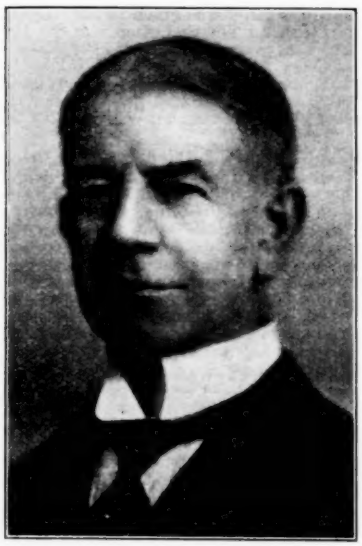
Outside his purely professional life Dr. Eddison was a man of varied culture. He was curator and four times president of the Leeds Literary and Philosophical Society, and on the Council of the Yorkshire Archæological Society. He was a great reader and had a most retentive memory; he was a man of great natural ability; his mind was nimble, alert, and keenly critical. In the opinion of many it was this very hypercritical frame of mind—which in justice it must be said he applied to his own observations and views as well as to those of others—that stood in the way of his contributing as much to the advance of medical science as his great abilities would have seemed to warrant. Eddison was one of the founders of the Leeds Trained Nurses' Institution. He was a magistrate for the West Riding and from 1908 to 1913 hon. colonel of the West Riding Division R.A.M.C. (T.).

Dr. Eddison married Elizabeth, eldest daughter of Mr. John Dougill, of Huddersfield, who survives him without issue. His body was taken back for burial to Adel Churchyard, where there was a large gathering of his old friends and colleagues, with representatives from the University of Leeds and the various bodies on which he served.

CHARLES HUBERT ROBERTS, O.B.E., M.D., F.R.C.P. LOND., F.R.C.S. ENG.

WE regret to record the death of Dr. C. Hubert Roberts who was well known in London as an obstetrician and gynæcologist. Roberts had suffered from failing health for the past year or two and had been advised to take long sea voyages. It was on one of these trips that he had to be landed in Denmark owing to an acute attack of influenza contracted in London some few days previously. He died on Jan. 29th in the sixty-fourth year of his age.

After leaving school at Bedford, Roberts entered the Medical College of St. Bartholomew's Hospital, where he had a distinguished career. Amongst his many successes he carried off the Junior and Senior Scholarships in Clinical Medicine and also the Brackenbury Scholarship in Surgery. Qualifying in 1889, he took the Fellowship of the Royal College of Surgeons in 1892 and won the Gold Medal in the London M.D. in 1896. For some years after qualification Roberts continued to work at his alma mater first in three successive resident posts, later as casualty physician, assistant demonstrator of anatomy in the school, and tutor in midwifery and diseases of women. In the latter capacity he proved to be a most successful examination coach, and when he resigned his appointment he held the record for distinctions gained by his pupils. On leaving St. Bartholomew's Dr. Roberts was appointed to the staff of Queen Charlotte's Hospital and the Samaritan Free Hospital, to which institutions he devoted the best part of his life, retiring only on attaining the age-limit four years ago. He was an active member of the Obstetrical Society and afterwards did his full share of sectional work at the Royal Society of Medicine, where he filled the offices of librarian, junior and senior secretary, and finally was made one of the vice-presidents of the Section of Obstetrics and Gynæcology. In 1910 Dr. Roberts was elected a Fellow of the Royal College of Physicians, and in due course he became an examiner on the Conjoint Board and also in the University of Sheffield and on the Central Midwives Board. He was not a voluminous writer on clinical subjects, but he wrote a useful book on gynæcological pathology and translated Orthmann's small text-book on the same subject. His illustrations in his own text-book and those he executed for some of his colleagues are of high artistic merit; indeed, at one time he had serious intentions of devoting himself entirely to art.



DR. C. HUBERT ROBERTS.

Roberts was a man of modest disposition, and this may, in some measure, have circumscribed his circle of acquaintances; but those who knew him in his work recognised him as an able diagnostician and a highly skilled obstetrician. He had a genial temperament and before his health failed used to delight in entertaining his friends at his club, and in his leisure hours enjoyed exploring the Thames valley in his motor-car, using his house at Taplow as a base.

A COVENTRY CONVALESCENT HOSPITAL.—Lady Haig last week opened, and the Bishop of Coventry dedicated, the Alcock Convalescent Hospital at Keresley Hall on the outskirts of Coventry as an adjunct to the Coventry and Warwickshire Hospital. The cost of the purchase and equipment were provided by a legacy of £11,000 left by the late Mr. John Alcock. There are 40 beds, and patients will be removed to Keresley as early as possible so that the long waiting-list of the main hospital may be shortened.

Parliamentary Intelligence.

NOTES ON CURRENT TOPICS.

LOCAL GOVERNMENT BILL.

ON Wednesday, Jan. 30th, the House of Commons went into Committee on the Local Government Bill. Captain BOURNE, Temporary Deputy Chairman of Committees, was in the chair.

Power to Remove Difficulties.

Clause 111 provides that—

"if difficulty arises in connexion with the application of the Act to any exceptional area, or in bringing into operation any of the provisions of the Act, the Minister may by order remove the difficulty or make any appointment, or do any other thing, which appeared to him necessary or expedient for bringing the said provisions into operation, and any such order may modify the provisions of this Act as far as may appear to the Minister necessary or expedient for carrying the order into effect."

Mr. G. B. HURST moved an amendment which he said raised an important constitutional issue because the effect of the clause was to delegate the sovereign powers of legislation to a Government Department. It was true that that delegation was for a limited period, but the fact remained that it was another illustration of the modern practice of Parliament of handing over its powers to departmental control. He moved to omit certain words from the clause with the object of restricting the powers proposed to be given.

Sir H. SLESSER, who supported the amendment, said that it reminded him of the Statute of Proclamations of King Henry VIII., which said that anything which was enacted by the King in Council should have the force of law.

Mr. CHAMBERLAIN (Minister of Health) said that the clause to which objection had been taken had behind it a great weight of precedent. This was no new provision. It was to be found in the Local Government Acts of 1888 and 1894; in the National Insurance Act, 1911; in the Unemployment Insurance Act, 1920; in the Widows', Orphans' and Old Age Contributory Pensions Act, and in the Rating and Valuation Act. There must be some such provision to avoid the necessity for bringing in an amending Bill every time any change was necessary. No case had arisen under clauses of this kind where Parliament had had cause to complain of its abuse.

Sir LESLIE SCOTT said he hoped that the Minister of Health before the report stage would consider whether he could not alter the wording of the clause so as to attain its object whilst avoiding the dangers of which many were now conscious.

Sir A. HOPKINSON said that they had had too much of substituting Ministerial Orders or Orders of a Department for Acts of Parliament.

Mr. RYE said that the Law Society regarded this clause with grave apprehension.

After further debate,

Sir KINGSLEY WOOD (Parliamentary Secretary to the Ministry of Health) promised that before the report stage the various suggestions that had been put forward during the debate should be considered with a view to amending the clause to bring it into conformity with what they all desired.

The amendment was thereupon withdrawn.

Sir KINGSLEY WOOD moved a new clause which he explained provided that before the expiration of the second fixed grant period the Minister in consultation with the local authorities should cause investigation to be made into the working of the formula and the scheme of county distribution.

The clause was read a second time and added to the Bill.

Sir KINGSLEY WOOD moved a new clause which he said gave effect to an agreement made with the local authorities in the following terms:—

It is hereby declared that it is the intention of this Act that in the event of substantial additional expenditure being imposed on any class of local authorities by reason of the institution of a new public health or other service after the commencement of this Act provision should be made for increased contributions out of moneys provided by Parliament.

The clause was carried by 188 votes to 96.

Sir KINGSLEY WOOD moved a new clause dealing with contributions to voluntary associations and introduced to meet the criticism that a voluntary association covering the whole of the country would be obliged to collect small sums from a large number of counties and county boroughs.

The new clause, he said, empowered the Minister, if application was made to him by the counties and county boroughs concerned, to make one payment on behalf of the councils to the association concerned in regard to services relating to maternity and child welfare, lunacy, mental deficiency, and the welfare of the blind, out of the sums payable as the general Exchequer grant.

Dr. VERNON DAVIES asked whether it would be necessary for the county to make application to the Minister every year or whether they could do so for a fixed period or until notice of cancellation?

Sir KINGSLEY WOOD said that he would consider what was the best arrangement. When the Act came into force it was the intention of the Minister of Health to address general communications to the local authorities concerning it, and in one of those communications attention would be directed to this clause.

The clause was read a second time and added to the Bill.

Sir KINGSLEY WOOD moved the following new clause dealing with special provisions as to the functions of poor-law authorities in respect of infant life protection and vaccination:—

As from the appointed day the following provisions shall have effect with respect to functions relating to infant life protection and vaccination formerly discharged by Poor-law authorities:—(*a*) Functions under Part I of the Children Act, 1908, shall, elsewhere than in the county of London, be discharged by the councils of counties and county boroughs as functions under the Maternity and Child Welfare Act, 1918, except that where the council of a district have established a maternity and child welfare committee the said functions shall, in that district, be discharged by the council of the district and not by the county council; and (*b*) Functions relating to vaccination shall be discharged by the councils of counties and county boroughs as functions relating to public health.

He said that this new clause was to make special provision for the functions of poor-law authorities in regard to infant life protection and vaccination. It was necessary to ensure that the functions in regard to those subjects were imposed upon the appropriate authorities and exercised by their appropriate committees. These functions were at present discharged by boards of guardians under Part I. of the Children Act, 1908, and the Vaccination Act respectively. In the absence of any special provisions they might be transferred to county and county borough councils on the appointed day. Therefore it was proposed that the exercise of these functions in all cases should be undertaken by the maternity and child welfare authorities. It was thought that it would be more satisfactory to give the work to those authorities who employed health visitors, the bulk of whose work related to children under 5 years of age. As regarded London, it was not necessary to make any special provision, since the London County Council and the City Corporation were already authorities under Part I. of the Children Act, 1908. In clause 52 of the Bill it would be found that there was power given to the London County Council to transfer their functions to the metropolitan borough councils subject to the making of the necessary application to the Minister. As regarded vaccination, the duties of boards of guardians under the Vaccination Act were in the nature of public health functions and had nothing whatever to do with the relief of the poor. The effect of paragraph (*b*) of the new clause would be to secure that the functions relating to vaccination should be discharged by the county and county borough councils as public health functions, and all matters relating thereto were referred to their health committees instead of to the public assistance committee. Special provision for vaccination work in London was contained in clause 15 (*f*) which provided that this work should be transferred from the boards of guardians to the common council of the City of London and to the councils of the metropolitan boroughs instead of to the London County Council. This provision was in accordance with the wishes of the county council and the borough councils.

The clause was read a second time and added to the Bill.

The committee stage of the Local Government Bill was concluded in the House of Commons on Friday, Feb. 1st, which was the thirteenth and last allotted day allowed under the terms of the Guillotine Resolution.

LOCAL GOVERNMENT (SCOTLAND) BILL.

ON Monday, Feb. 4th, consideration of the Local Government (Scotland) Bill was begun in Committee.

Transfer of Functions.

On clause 1, which provides for the transfer of functions of parish councils and district boards of control to county councils and town councils of large burghs, Sir A. SINCLAIR moved the deletion of the provision relating to the parish councils. Sir J. GILMOUR said that the new central authorities to be set up would be the elected representatives of the people, charged with certain duties, but it was clearly indicated that those bodies should submit definite schemes showing in detail how they would carry out their duties. In the case of the poor-law it was obvious that there must be within these schemes such measure of arrangement as would insure that immediate relief was given to the necessitous people within the district. The real essence of the Bill was that there should be a large amount of elasticity in order that the peculiar problems of particular areas might be dealt with. Dr. ELLIOT, replying to a question, explained that it would be possible to treat the sick poor under Acts other than the poor-law. The amendment was defeated by 193 votes to 94.

Sir J. GILMOUR, speaking of the duties to be transferred from parish councils to district councils said that a number of amendments which he would move carried out an undertaking which he gave on the second reading. The duties to be transferred were, in the main, the same duties as the parish councils were performing to-day, with certain exceptions. The chief exception was that of the poor-law, but in the matter of dealing with outdoor relief the central body might under their scheme delegate some part of the work to the district councils. The amendments, moved by Sir J. Gilmour, were afterwards carried, and the clause added to the Bill.

On clause 2, which deals with the transfer of certain other functions to the county councils, Dr. SHIELS moved the omission of para. (*b*), which transfers the functions of town councils of small burghs within the county as local authorities for the purposes of the statutory provisos set out in Part I. of the First Schedule. (Part I. includes the Infectious Disease (Notification) Act, the Public Health (Scotland) Acts, 1897 to 1907, so far as relates to infectious, epidemic, and endemic diseases, buildings for post-mortem examinations, vaccination and unsound food, and the Notification of Births Acts, the Midwives (Scotland) Act, the Venereal Disease Act, 1917, Section 4 of the Maternity and Child Welfare Act, 1918, the Public Health (Scotland) Amendment Act, 1925, Midwives and Maternity Homes (Scotland) Act, 1927, and the Food and Drugs (Adulteration) Act, 1928.

Dr. SHIELS said that the proposal did not seem to have any justification and had no relation to the de-rating proposals. The small burghs had for hundreds of years been places of efficient government. Sir J. GILMOUR replied that it was not the case that the county councils were inefficient. The small burghs would under the Government's scheme play a very large and important part in the policy and administration with which the new larger authorities would be entrusted. The amendment was rejected, and the clause added to the Bill.

On Tuesday, Feb. 5th, consideration of the Scottish Bill was resumed in Committee. On Clause 3, Sir R. HAMILTON moved to omit the subsection providing for the transfer of the functions of the education authorities.

Reply to the Debate.

Dr. ELLIOT, replying to the debate, said that at this moment a recasting of local government was taking place in Scotland, and they expected an extension and enlargement of the powers of the central bodies—the county councils and the town councils—to take place which would raise them to a position of prestige and dignity which they had never enjoyed before. Their hands were being freed by a new grant to a very large extent from many of the niggling controls which it was necessary to place on them when the system of the percentage grant was introduced. Furthermore, in the health clauses, the Government were making it possible to alter the health system of Scotland along the line which the health reformers had been demanding now for many years past. When all these great changes were taking place it would be folly and criminal to leave out of account the 8,000,000 school-children who were the very flower of Scotland. The time had gone past when it was possible to treat the mind of the child apart from the body of the child. They must have the close and intimate connexion of the great new authority which was responsible not *ad hoc* for health but *ad omnia*, as health was one of the major functions; if health was not too important a subject to put into the hands of this great new authority, their education was not too important either. If they could entrust this new authority with the terrible and powerful responsibility of tender years of child life of Scotland from 1 to 5, and with the life of the adults of Scotland from school age to death and the bodies of Scotsmen and Scotswomen, it would be going back on all that they were bringing forward and on the whole period of health as one of the most important of modern functions to say that the body was the secondary thing and that an *ad omnia* authority can take charge of the bodies of the people of Scotland, but that in respect of this question of

book learning there was something so sacred that it had got to be removed entirely from the ambit of that authority and to be put under different control. The Government's theory and conviction was that the body was as sacred as the mind, and if they could make a strong, fit, and burly generation of young Scots then they would have done something to which the making of the mind of the Scotsman and Scotswoman was not a secondary thing. That is their contention, and it was the contention of the great medical school—call it if they would a materialistic ideal, but the Government did not regard it as such.

The amendment was defeated and the clause agreed to.

Clauses 4, 5, and 6 were agreed to under the guillotine; also Clause 7, which provides for the transfer of officers and superannuation funds.

CORONERS ACTS AMENDMENT BILL.

On Wednesday, Jan. 30th, Mr. MORRIS asked for leave to bring in a Bill to amend the Coroners Acts, 1887 to 1926. He said that as the law stood, where a coroner's court had assembled and a person had been arrested and brought before a magistrate the coroner must, unless he had good reason to the contrary, adjourn the inquest. If the person was charged on an indictment and acquitted on the re-assembling of the coroner's court the jury could not find a verdict against that person, but if the charge was dismissed by the magistrate the jury could find a verdict against the person who had been discharged by the magistrate. A case had arisen at Oxford Assizes in the previous week where such a person after being acquitted by the magistrates was not only again placed in the dock, but had to bear all the expenses of his defence, in addition to which the country had to bear the expense of the attendance of numerous witnesses who were involved in the case. Such a position was illogical and the object of the present Bill was to amend the law accordingly.

The Bill was brought in and read a first time.

DISTRESSED AREAS.

On Feb. 4th Lord EUSTACE PERCY informed Mr. LANSBURY that in Northumberland and Durham £6000 had been placed at the disposal of the medical officers of health of the two countries for supplementary nourishment of mothers.

HOUSE OF COMMONS.

WEDNESDAY, JAN. 30TH.

Disablement in the Navy.

Mr. ROBINSON asked the First Lord of the Admiralty the number of ratings, and the percentage to the total strength, invalided out of the Navy in each of the years ending December 1922, 1923, 1924, 1925, 1926, 1927, and 1928, and the number in each year that were granted disability pensions.—Lieut.-Colonel HEADLAM gave the following figures:—

Year.	Number Invalided.	Percentage to total strength.	Number awarded disability pensions.
1922 ..	2,028	2	379
1923 ..	1,474	1·6	322
1924 ..	1,330	1·5	543
1925 ..	1,517	1·7	522
1926 ..	1,726	1·9	561
1927 ..	1,342	1·5	442
1928 ..	1,242	1·3	402

Spectacles for School-children.

Mr. DAY asked the President of the Board of Education how many children had been fitted and supplied with spectacles in England by the education authorities during the previous 12 months, and whether any, and, if so, how many of these authorities had the advantage of an experienced oculist.—Lord E. PERCY replied: The number of children provided with spectacles in England, under arrangements made by the education authorities during 1927 (the latest period for which returns are available), was 120,413. Out of 288 authorities in England 286 have the services of an experienced oculist.

Dangerous Drugs Traffic at Hong-Kong.

Mr. CECIL WILSON asked the Secretary of State for the Colonies why the import of raw opium from India into Hong-Kong rose from 11,998 kilogrammes in 1926 to 17,089 kilogrammes in 1927; and what the consumption of Government opium amounted to for each of the last five years per head of the Chinese population of Hong-Kong.—Mr. AMERY replied: The opium imported into Hong-Kong from India in 1927 was the authorised amount under the system of restricted exports introduced by the Government of India as from that year. It was based on the average imports of the previous five years, and happened to be greater than that for 1926 because in that year imports were considerably below the average. The consumption of Government opium in Hong-Kong per head of the estimated Chinese population, for the last five years for which figures are available, was: 1923, 0·51 oz.; 1924, 0·47 oz.; 1925, 0·31 oz.; 1926, 0·26 oz.; and 1927, 0·39 oz.

Mr. CECIL WILSON asked the Home Secretary whether his attention had been called to the document O.C. 877, presented a few days ago to the Opium Advisory Committee of the League of Nations, now sitting in Geneva; how the 734 kg. of heroin seized in Hong-Kong in 1924 and brought to Great Britain for disposal were disposed of, and what quantities of this drug had when seized been disposed of during the last five years.—Sir W. JOYNSON-HICKS replied: Yes, Sir. The heroin referred to was sold in this country in 1924 to persons duly authorised under the Dangerous Drugs Acts and Regulations to possess heroin. The total quantity of heroin seized and brought to this country for disposal from 1924 to date was 38.549 ounces. It was all disposed of to persons licensed under the Acts.

THURSDAY, JAN. 31ST.

Supplies of Radium.

Mr. ROBERT MORRISON asked the Minister of Health the quantity of radium at present in this country which was not being used, and who were the owners.—Mr. CHAMBERLAIN replied: I have no means of obtaining full information on this subject. Certain supplies of radium are in the hands of voluntary institutions and private persons. The uses of radium are not restricted to therapeutic purposes, and it rests with those to whom the supplies belong to secure their economical full usage.

Mr. MORRISON: In view of the difficulties which are being caused by local authorities and hospitals endeavouring to purchase radium, will the right hon. gentleman consider the advisability of taking action in order that these bodies may not compete against each other for the radium?

Mr. CHAMBERLAIN: I have told the hon. Member that this matter is under consideration by a special committee whose report I am expecting to receive very shortly.

Assessments of Voluntary Hospitals.

Sir ARTHUR HOLBROOK asked the Minister of Health if he had received complaints as to the large increases recently made in the assessments of voluntary hospitals; and whether, having regard to the benefits conferred on the community by these institutions and the financial difficulties under which many of them were suffering, he would consider the exemption of all voluntary hospitals from local rates.—Mr. CHAMBERLAIN replied: I have received some representations on this subject. The exemption of hospitals from rating could not be effected without legislation, and in my opinion any such proposal cannot be considered apart from the similar claims made on behalf of other charitable and public institutions.

MONDAY, FEB. 4TH.

Nursery Schools.

Mr. HARRIS asked the President of the Board of Education what progress had been made in the organisation of the nursery schools during the last 12 months; and if any new ones had been started during that period.—Lord EUSTACE PERCY replied: One new nursery school has been opened during the last 12 months; two schools are in course of erection. I have approved in principle the provision by the county council of two new schools in London, and I have also received an application for the recognition of a school in London under voluntary management. Four proposals by local authorities, and one by a voluntary body of managers, in the provinces are also under consideration.

Asbestosis.

Mr. W. THORNE asked the Home Secretary if his attention had been called to the prevalence of asbestos of the lungs among young girls employed in asbestos works and which had been diagnosed as asbestosis; if he was aware that cases had been admitted to St Thomas's and the London Chest Hospitals with this complaint; whether he had any record of the number of these cases; and whether he intended to schedule this disease under the Workmen's Compensation Acts.—Sir W. JOYNSON-HICKS replied: The Senior Medical Inspector of Factories reports that while he

is aware of cases of so-called asbestosis of the lungs among women, the effects of asbestos dust are already the subject of a comprehensive inquiry by the medical inspectors, which is being pushed forward as rapidly as possible. As soon as the results of this inquiry are available the question of applying the Workmen's Compensation Act will be considered.

Artificial Silk Industry.

Mr. KELLY asked the Home Secretary what decision he had arrived at in the matter of placing under the Workmen's Compensation Act certain operations in the artificial silk industry as coming under the industrial diseases section.—Sir W. JOYNSON-HICKS replied: I would refer the hon. Member to my reply on May 17th last and to my correspondence with him in September, when I explained the whole position very fully. No fresh facts have since been brought to my notice which would lead me to modify the views then expressed. The only two specific ailments which have so far been brought to my notice in connexion with the artificial silk industry are conjunctivitis of the eyes and sores on the hands, which are sometimes caused by the acid. As regards the conjunctivitis there do not appear to be any sufficient grounds for scheduling this disease. Compensation is not payable under the Act unless the worker is disabled for at least three days, and I am advised that even the severer cases of this affection do not as a rule disable the workman for more than one or two days and that where in exceptional cases it has caused more prolonged disablement it has been due to actual splashes of the acid into the eye, which would constitute an accident within the meaning of the Act. The sores on the hands would appear to be covered by the diseases already scheduled under the Act as dermatitis or ulceration of the skin produced by dust or liquids, but these sores, if treated promptly, should not incapacitate the workman.

A Child's Tonsils.

Mr. VIANT asked the President of the Board of Education whether he was aware that the education authority of Wolverhampton recently initiated a prosecution against Ernest Henry Gwinnett for cruelty to his daughter Gertrude Lily, aged 6, by failing to provide adequate medical aid in the matter of enlarged tonsils; that the only evidence tendered for the prosecution was that of three school medical officers and a schoolmistress; that the senior medical officer stated that the only remedy possible was a surgical operation; that a conviction was recorded; that, on an adjournment, as a result of the intervention of a local branch of the Distributist League, Mr. Gwinnett was represented, and two qualified London physicians in person, two more by affidavit, and one by certificate testified that the child was not suffering and that alternative treatment was practicable; and that this case was concluded on payment of a nominal fine of £2 without costs on an undertaking being given that treatment should continue; whether any expense had been incurred by the education authority.—Lord EUSTACE PERCY replied: I have seen a press report of the case referred to. I understand that it was stated on behalf of the local education authority that it was not their intention to force an operation on Mr. Gwinnett's child, and that all they required was that some treatment should be applied which would be as effective as an operation in curing the child. I have no information as to the expenditure, if any, incurred by the local education authority in connexion with the proceedings.

TUESDAY, FEB. 5TH.

National Health Insurance Control.

Mr. SHINWELL asked the Chancellor of the Exchequer whether he was considering an arrangement with any assurance companies for handing over control of the National Health scheme; and whether he would put the House in possession of all the facts.—Mr. CHURCHILL: I have seen this suggestion in a weekly journal. I gave a denial to it in answering a supplementary question put on Jan. 31st by the hon. gentleman the Member for Miles Platting. I am glad to have this opportunity of repeating the denial. The story is quite untrue. No such project has ever been brought before me or considered by me or by any of my advisers.

Influenza in Glasgow.

Mr. BUCHANAN asked the Secretary of State for Scotland if he was aware of the present epidemic of influenza in Glasgow and the increase of the death-rate arising from it; if his department had made special investigation into the cause; and, if so, what was the result.—Sir J. GILMOUR replied: As regards the first part of the question, I am aware that there is at present an epidemic of influenza in Glasgow, and a regrettably high general death-rate. There is an exceptionally high incidence of acute pneumonia, both primary and influenzal. As regards the second part, the Department of Health are in continuous touch with the Public Health Department of Glasgow, and are aware of the extent and efficiency of the measures taken in coöperation with the poor-law and voluntary hospitals to provide hospital treatment and nursing and medical care in the home. Notwithstanding the notification of nearly 1200 new cases of pneumonia in the week ended Jan. 31st, the waiting list has been cleared and the epidemic, it is believed, has passed the peak. As regards the last part, research into the causation of influenza, into its spread in epidemic form, into its pathology and into its remedy is being continuously pursued by workers in this and in other countries, and in this connexion the present outbreak is being watched and studied. I am of opinion that it is from research of this kind that the most useful results are to be expected.

Silicosis in the Sandstone Industry.

Mr. RENNIE SMITH asked the Home Secretary if he could furnish particulars of the proposed special scheme under Section 47 of the Workmen's Compensation Act, 1925, providing for compensation for silicosis for workmen in the sandstone industry; and if he could indicate the chief areas of the country, with the number of workmen involved.—Sir W. JOYNSON-HICKS replied: I am sending the hon. Member a copy of the draft scheme together with a copy of an explanatory letter issued to employers affected. I am also enclosing a copy of a report which has been published by H.M. Stationery Office, of a medical inquiry recently carried out for the Home Office and Mines Department into the occurrence of silicosis in the sandstone industry. The chief areas concerned are West Riding of Yorkshire Lancashire, North Derbyshire, and Durham and Northumberland. It is impossible to give accurate figures as to the number of workmen affected, but it is estimated roughly that the number will be not less than 11,000.

Mr. KELLY asked the Home Secretary if he would state the number of cases of disablement from silicosis which were reported during 1928; how many were partially disabled; the number permanently disabled; and the number of deaths from this disease.—Sir W. JOYNSON-HICKS said: This disease is not notifiable and I regret that the only figures I can give are those of cases dealt with under the Refractories Industries scheme. The new cases arising under that scheme in 1928 included 27 cases of partial and five cases of total disablement; and four deaths. In addition, there were three deaths of workmen who had previously been in receipt of compensation.

MEDICAL BATHS, TORQUAY.—A new vita-glass sun lounge at the Medical Baths, Beacon Hill, Torquay, will be opened by Sir Henry Gauvain on Feb. 20th, at 3.30 P.M.

ELLA SACHS PLOTZ FOUNDATION FOR THE ADVANCEMENT OF SCIENTIFIC INVESTIGATION.—The fifth annual report of this Foundation has just been issued. During the year 43 applications for grants were received by the Trustees, 29 of which came from other countries and 14 from the United States. The total number of grants made was 21. In the five years of its existence the Foundation has made 73 grants and investigators have been aided in the United States, Great Britain, France, Germany, Austria, Hungary, Switzerland, Italy, Sweden, Esthonia, Czecho-Slovakia, Poland, Chile, and Syria. A list of investigators and of the researches which have been aided in the current year is given. In accordance with the statement made by the trustees regarding the purposes for which the Fund would be used those researches are favoured that are directed towards the solution of problems in medicine and surgery or in branches of science bearing on medicine and surgery. As a rule preference is given to researches on a single problem or on closely allied problems. Grants may be used for the purchase of apparatus and supplies that are needed for special investigations, and for the payment of unusual expenses incident to such investigations, including technical assistance, but not for providing apparatus or materials which are ordinarily a part of laboratory equipment. Stipends for the support of investigators will be granted only under exceptional circumstances. In 1928 the largest grant given was $1000 (to each of three workers) and the smallest given was $250. No grants to British workers appear to have been made during the year. Applications for grants to be held during the year 1929–30 should be in the hands of the Executive Committee before May 15th, 1929. Applications should include statements as to the character of the proposed research, the amount of money requested, and the objects for which the money is to be expended, and should be addressed to Dr. Joseph C. Aub, Huntington Memorial Hospital, 695, Huntington-avenue, Boston, Mass.

Medical News.

UNIVERSITY OF CAMBRIDGE.—At recent congregations the following degrees have been conferred:—

M.D.—A. D. Porter.
M.B. and B.Chir.—W. J. Lloyd.
B.Chir.—S. D. Isaacs and W. E. Underwood.

SOCIETY OF APOTHECARIES OF LONDON.—At recent examinations the following candidates passed in the undermentioned subjects:—

Surgery.—J. S. B. Bray, Cambridge and St. Bart.'s Hosp.; N. N. Datta, London Hosp.; A. R. Edwards, Liverpool; and C. F. H. Quick, St. Mary's Hosp.
Medicine.—G. E. Bent, Manchester; J. S. B. Bray, Cambridge and St. Bart.'s Hosp.; and A. Weeks, St. Bart.'s Hosp.
Forensic Medicine.—J. S. B. Bray, Cambridge and St. Bart.'s Hosp.; J. Freud, Vienna and St. Bart.'s Hosp.; L. P. Gregory, Bristol; I. Lipschitzi, Liverpool; and A. Weeks, St. Bart.'s Hosp.
Midwifery.—J. Freud, Vienna and St. Bart.'s Hosp.; H. G. Edmunds, Univ. Coll. Hosp.; and D. F. Michael, St. Mary's Hosp.

The Diploma of the Society was granted to the following candidates entitling them to practise medicine, surgery, and midwifery: G. E. Bent, J. S. B. Bray, J. Freud, and A. Weeks.

ROYAL COLLEGE OF PHYSICIANS OF LONDON.—At an ordinary quarterly Comitia of the College held on Jan. 31st, the President, Sir John Rose Bradford, being in the chair, the following candidates, having satisfied the Censors' Board, were elected to the Membership of the College:—

Eric Newmarch Allott, Gerald Vincent Francis Doyle, Gareth Aimers Eason, Alfred Henry Gerrard, Jessie Gordon, Lazarus Hartston, Kenneth Hoani Holdgate, Herbert Hylton Hyland, Simon Kelly, Michael Edward Lampard, Samson George Moore, Kenneth Beeson Noad, Walter Gordon Chisholm Paterson, Robert Sturtevant Pilcher, Charles Percy Pinckney, Francis Crosbie Roles, Cyril Dee Shapland, Bryan Buckley Sharp, Clive Henry Sippe, Robert Stanley Steel, Robert W. Glennan Stewart, Warrington Yorke, Janet Dorothea Ernestine Young.

Licences to practise were conferred upon 149 candidates (134 men and 15 women) who have passed the Final Examination in Medicine, Surgery, and Midwifery of the Conjoint Board and have complied with the by-laws of the College. The following are the names and medical schools of the successful candidates:—

H. H. Aitchison, Oxford and London; G. G. Allan, Cambridge and Univ. Coll.; Lucy E. Arthur, Royal Free; M. W. Atkinson, Middlesex; S. W. Barber and R. C. Bennett, St. Bart.'s; H. Bernstein, Cape and Univ. Coll.; G. H. Bradshaw, Cambridge and St. Bart.'s; Rochelle Churin, Royal Free; F. Clifton, Cambridge and St. Thomas's; G. C. Cochrane, Liverpool and London; C. E. Corrigan, Manitoba; C. F. Cosin, Guy's; Florence K. Costello, Sydney and Charing Cross; P. J. Cowin and D. F. L. Croft, St. Bart.'s; R. Cutler, Guy's; L. E. Daniel, Madras and St. Thomas's; C. J. M. Dawkins, Cambridge and Middlesex; E. M. Dimock, Cambridge and Univ. Coll.; J. Donovan, Leeds; H. A. Eason, London; A. M. Easton, St. Thomas's; J. A. Eddy, Oxford and Middlesex; M. A. A. El Gammal, Cairo; A. C. Elkin, Univ. Coll.; G. W. Etches, Leeds and London; T. Evans, Bristol; T. C. J. Evans, Birmingham and St. Mary's; A. D. Everett, St. Bart.'s; T. D. Finey, Adelaide and London; W. R. Forrester-Wood, Cambridge and St. Bart.'s; C. H. Forsyth, London; E. Foster, Cardiff and St. Mary's; R. H. Francis, Cambridge and St. Bart.'s; S. L. Gargye, Indore and Manchester; W. S. Ghai, Punjab and Charing Cross; J. M. Gibson, Oxford and St. Thomas's; P. J. E. Godard, Lausanne and Paris; M. W. Gonin, I. Gordon, and J. T. C. Gray, St. Bart.'s; D. R. Griffith, St. Thomas's; C. C. Griffiths, Liverpool; A. J. Groenewald, Cape and Guy's; Gwendoline E. Grove, Cambridge and St. Mary's; R. G. Gwynne, Adelaide and London; M. K. Gyi, Guy's; R. W. Haines, Univ. Coll.; A. S. Hall, Cambridge and St. George's; H. S. Hamlin, St. Thomas's; J. M. Harker, London; H. M. Harris, Oxford and London; G. F. Harrison, St. Thomas's; F. F. Hellier, Cambridge and Leeds; R. T. Hicks, Univ. Coll.; Louisa S. Hobbs, Charing Cross; R. C. Holderness, Leeds; F. W. Holdsworth, Cambridge and St. George's; G. J. Hollis, South Africa and Guy's; A. S. Hoseason, St. George's; R. I. Hyder, London; C. G. Jobbins, Cambridge and St. Thomas's; Margaret L. Jones, Univ. Coll.; O. T. Jones, Cardiff and St. Bart.'s; H. W. Jordan, Univ. Coll.; S. E. Knowles, Guy's; L. W. A. Lankester and J. F. V. Lart, Cambridge and St. Thomas's; Cesia Leben, Univ. Coll.; Florence M. Lessing, Univ. Coll. and Charing Cross; A. Levy, St. Thomas's; K. Lindberg, Paris and Middlesex; A. G. Lloyd, Durham; R. M. B. Lowis, St. Thomas's; Dorothy M. Lufkin, Univ. Coll.; R. Machray, Westminster; J. K. Marshall, Oxford and Guy's; A. Mathews, London; S. N. Mathur, Lucknow and London; R. A. Maynard, Cambridge and St. Thomas's; K. G. Milad, St. Mary's; W. B. Millar, Middlesex; M. V. Modi, Bombay and London; G. Morgan, St. Mary's; G. H. Morley, Middlesex; J. E. Myers, Adelaide and London; T. H. Negus, St. Thomas's; D. A. Nicoll, King's Coll.; G. S. Nightingale, London; W. G. Oakley, Cambridge and St. Bart.'s; R. I. O'Farrell, Sheffield; T. L. Owen, Leeds; L. G. M. Page, St. Bart.'s; A. J. Parer, Sydney and King's Coll.; A. F. Parker, London; A. R. D. Pattison, Durham; I. Preiskel, St. Bart.'s; R. Purvis, St. Thomas's; S. M. Rahman, Calcutta and Middlesex; A. S. Rajasingham Ceylon and Middlesex; T. G. Reah, Cambridge and London; Dorothy K. Reynolds, King's Coll.; A. C. Riley, St. Bart.'s; G. L. Robinson, Cambridge and London; V. C. Robinson, Cambridge and St. Bart.'s; T. S. Rodgers, Westminster; E. B. Rogers, Guy's; B. Rothery, Cambridge and St. George's; A. S. D. Russell, St. Thomas's; B. W. Rycroft, St. Andrew's; N. Sachnovics, Berlin and Guy's; H. R. D. Schofield and T. L. Scott, St. Mary's; Mary Scouloudi, Univ. Coll.; D. A. Seaman, Birmingham; J. E. Semple, Cambridge and St. Thomas's; G. M. A. Shaikh, Bombay and London; Mary E. Sharp, Univ. Coll.; J. D. Simpson and A. D. Skyrme, Cambridge and London; C. E. Soodeen, Middlesex; A. Southgate, Charing Cross; B. Stanley, Univ. Coll.; H. Stark, St. Bart.'s; E. T. W. Starkie, Cambridge and St. Mary's; G. A. Stevenson, Birmingham; E. C. Sugden and H. Taylor, Cambridge and St. Bart.'s; I. Taylor, King's Coll.; V. C. Thompson, Cardiff and St. Bart.'s; S. A. Underwood, St. Mary's; Bertha D. Upton-Jones, Royal Free; V. C. Verbi, King's Coll.; Frances J. Vinter, Royal Free; W. E. Waimman, Leeds; C. M. E. Warner, Bengal and King's Coll.; R. P. White and J. S. Whiting, Cambridge and St. Bart.'s; Florence Whitrow, Manchester; A. G. Williams, Cardiff and St. Bart.'s; A. W. Williams, Cambridge and Westminster; J. D. Williams, Cardiff; Beatrice M. Willmott, Cambridge and Birmingham; G. M. Willoughby, Middlesex; W. R. Winterton, Cambridge and Middlesex; F. G. Wood-Smith, Cambridge and St. Bart.'s; R. G. Zaglama, Assiut and Manchester; E. Zimbler, Dorpat and Middlesex.

The undermentioned diplomas were also conferred conjointly with the Royal College of Surgeons, to the following candidates:—

Diploma in Public Health.—G. E. Addison, N. T. Advani, C. L. Ahluwalia, J. S. Allan, A. N. Chopra, Marguerite E. Cliff, W. Conroy, K. St. V. Edwards, E. Egan, J. Egan, V. Feldman, J. Ferguson, M. T. Fernando, Barbara Finch, A. N. Ghei, Winefride M. Gibson, N. G. Hill, Katherine M. Hirst, D. P. Holmes, Amelia M. Ison, C. W. W. Jeremiah, Ellen F. Kelleher, W. H. Kelleher, L. D. Khatri, E. T. Lloyd, W. S. Martin, M. V. Merchant, P. L. Nirula, Mary O'Leary, Helen E. D. E. Ornstein, W. G. Patterson, R. F. Pinson, F. W. G. Smith, R. B. Subramanyam, R. W. C. Thambiah, D. J. Valentine, and E. M. Wright.
Diploma in Psychological Medicine.—R. W. Armstrong, Eileen A. Chennell, A. Craig, H. Hinchco, Phyllis M. Horton, D. L. McCullough, D. Menzies, J. E. Nicole, Muriel L. M. Northcote, Eveleen J. O'Brien, J. C. Ramsay, and C. E. Roachsmith.
Diploma in Laryngology and Otology.—M. I. Ashmawi, A. Blagoff, N. M. Eadie, M. Husnain, N. H. Meacle, H. V. O'Shea, H. M. Petty, S. Roy, E. C. Tamplin, and W. L. Thomas.

Dr. C. H. J. Lockyer was elected to the Council in the place of Sir Hugh K. Anderson (deceased), Dr. Gordon Holmes was elected examiner in psychological medicine, and Dr. W. J. Fenton examiner in medicine.—The award of the Swiney Prize for 1929 to Dr. Sidney Smith was announced.

ROYAL MEDICO-PSYCHOLOGICAL ASSOCIATION.—The next quarterly meeting of th's Association will be held on Feb. 14th at the British Medical Association House, Tavistock-square, London, W.C., under the presidency of Prof. J. Shaw Bolton, when the discussion on General Paralysis, adjourned from the November meeting, will be resumed.

PHARMACEUTICAL SOCIETY OF GREAT BRITAIN.—A conversazione will be held at the Society's house, 17, Bloomsbury-square, London, W.C., on Tuesday, Feb. 12th, from 7.30 P.M. to 10 P.M., when the whole premises will be open to visitors, and exhibits will be shown in the museums and laboratories.

WEST KENT MEDICO-CHIRURGICAL SOCIETY.—A meeting will be held at the Miller General Hospital, Greenwich, London, S.E., to-day, Feb. 8th, at 8.45 P.M., when Mr. H. P. Winsbury White will read a paper on Chronic Infection of the Urinary Tract, its Causes and Treatment, with illustrations.

MANCHESTER AND DISTRICT RADIUM INSTITUTE.—The executive committee of this Institute have decided, subject to careful safeguards, to let out radium on hire to hospitals and to practitioners. Up to the present this has not been done in Manchester, although it is the custom at the London Radium Institute and the Belgian Institution in Brussels. The conditions of hire have yet to be formulated. The committee have also decided to make a further purchase of radium for this purpose, money having been received from the trustees of the late Mr. John Barlow. Dr. G. E. Birkett, who has been radiologist to the Institute during the past six years, has been appointed honorary consulting radiologist. It has been decided to appoint a second assistant radiologist, so that in future there will be three experts constantly working in the service of the Institute.

LIVERPOOL SCHOOL OF TROPICAL MEDICINE.—This school is appealing for £150,000 in order to free itself from continual financial embarrassment. The appeal embraces a scheme to commemorate Alexander Mackay, of Uganda, by endowing research fellowships in the school. Miss Caton, daughter of the late Prof. Richard Caton, M.D., has given £2000 to be devoted to an object which can be associated with her father's name. This sum is to be earmarked towards the endowment of a Caton Research Fellow in Biochemistry.

THE NEW FREEMASONS' HOSPITAL.—It is estimated that the total cost of providing the new Freemasons' Hospital at Ravenscourt Park, Hammersmith, will be a quarter of a million. The hospital has outgrown its present quarters in the Fulham-road, the number of patients last year, 686, having been the largest on record. Of these, 244 came from the provinces and overseas. The new site, which practically adjoins Ravenscourt Park, is 3½ acres in extent, and there are to be from 120 to 130 beds, a very large increase upon the present number, with capacity for easy extension.

Medical Diary.

SOCIETIES.

ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street, W.

TUESDAY, Feb. 12th.—8.30 P.M., PSYCHIATRY and NEUROLOGY, Special Discussion on Prognosis and Treatment of General Paralysis of the Insane. Openers: Dr. W. H. B. Stoddart (Psychiatry), Sir James Purves-Stewart (Neurology). Other speakers: Dr. J. Brander, Dr. G. de M. Rudolf, Major F. H. Stewart, I.M.S., Dr. Thomas Tennent, Surgeon Rear-Admiral E. T. Meagher, R.N., Dr. R. M. Stewart, and others. THERAPEUTICS: There will be no Meeting of this Section in February.

WEDNESDAY.—5.30 P.M., SURGERY: SUBSECTION OF PROCTOLOGY. Short Papers: Mr. W. B. Gabriel: Case of Carcinoma of the Rectum Complicated by Enlarged Prostate. Dr. P. H. Manson-Bahr: Pathology of Bilharzia and Amœbic Dysentery of Colon and Rectum. Mr. R. Maingot: Three Cases of Acute Intestinal Obstruction Due to Fæcal Impaction. Mr. A. Lawrence Abel: Three Cases of Multiple Cancers of Rectum and Colon.

THURSDAY.—5 P.M., BALNEOLOGY. (Exhibition of photographs at 4 P.M.) Discussion on Osteo-arthritis. Opening Papers will be read by: Dr. R. G. Gordon (Bath). Dr. J. A. Thomson (Harrogate): Osteo-arthritis Radiographically Considered. Dr. Tom Hare and Dr. Henry Cohen: The Chemical Estimation of Synovial Fluid and Blood Serum of Horses Affected with Chronic Arthritis. 8.30 P.M., PSYCHIATRY and NEUROLOGY. Special Discussion on Prognosis and Treatment of General Paralysis of the Insane, continued from Tuesday.

FRIDAY.—8 P.M., OBSTETRICS. Paper: Prof. J. Heyman (Stockholm): The Uses of Radium in the Treatment of Malignant Diseases of the Uterus and Ovaries. Mr. Victor Bonney and Dr. J. D. Malcolm will also speak. 8 P.M., ELECTRO-THERAPEUTICS. Discussion on Chronic Rheumatism of Joints and Muscles: Diagnosis and Treatment.

ROYAL INSTITUTION, Albemarle-street, W.

THURSDAY, Feb. 14th.—5.15 P.M., Sir William Bragg: The Early History of X rays.

FRIDAY.—9 P.M., Mr. E. K. Rideal, D.Sc.: Chemi-Luminescence.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

ROYAL COLLEGE OF SURGEONS OF ENGLAND, Lincoln's Inn Fields, W.C. (Arris and Gale Lectures.)

MONDAY, Feb. 11th, WEDNESDAY, and FRIDAY.—5 P.M.: Prof. H. A. Harris: Bone Growths in Health and Disease.

FELLOWSHIP OF MEDICINE AND POST-GRADUATE MEDICAL ASSOCIATION, 1, Wimpole-street, W.

MONDAY, Feb. 11th, to SATURDAY, Feb. 16th.—MEDICAL SOCIETY OF LONDON, 11, Chandos-street, Cavendish-square, W. Mon., at 5 P.M., Lecture, Mr. Andrew Wylie: The Difficulties Experienced in the Diagnosis of Laryngeal Diseases. Thurs., at 4.30 P.M., Lecture, Dr. Gerald Slot: Calcium Therapy.—PRINCE OF WALES'S GENERAL HOSPITAL, Tottenham, N. Mon., at 2.30 P.M., Clinical Demonstration, Mr. Aubrey Goodwin (Gynæcology), Out-patient Department.—ST. JOHN'S HOSPITAL, Leicester-square, W.C. Tues., at 6 P.M., Demonstration, Dr. J. E. M. Wigley (Dermatology).—WELLCOME MUSEUM OF MEDICAL SCIENCE, 33, Gordon-street, W.C. Wed., at 4 P.M., Demonstration, Dr. S. H. Daukes: A Consideration of Various Types of Ulceration Met with in the Stomach and Intestines. The above are free.—CHELSEA HOSPITAL FOR WOMEN, Arthur-street, S.W. Special Course in Gynæcology. Some mornings and afternoons.—ST. JOHN'S HOSPITAL, Leicester-square, W.C. Special Course. Afternoons and evenings. Lectures twice weekly. Duration four weeks. Further information from the Secretary of the Fellowship of Medicine.

NORTH-EAST LONDON POST-GRADUATE COLLEGE Prince of Wales's General Hospital, Tottenham, N.

MONDAY, Feb. 11th.—2.30 to 5 P.M.: Medical, Surgical, and Gynæcological Clinics. Operations.

TUESDAY.—2.30 to 5 P.M.: Medical, Surgical, Throat, Nose and Ear Clinics. Operations.

WEDNESDAY.—2.30 to 5 P.M.: Medical, Skin, and Eye Clinics. Operations.

THURSDAY.—11.30 A.M.: Dental Clinics. 2.30 to 5 P.M.: Medical, Surgical, and Ear, Nose and Ear, Nose and Throat Clinics. Operations.

FRIDAY.—10.30 A.M.: Throat, Nose and Ear Clinics. 2.30 to 5 P.M.: Surgical, Medical, and Children's Diseases Clinics. Operations.

CENTRAL LONDON THROAT, NOSE, AND EAR HOSPITAL, Gray's Inn-road, W.C.

FRIDAY, Feb. 15th.—4 P.M., The Significance of Aural Pain.

LONDON SCHOOL OF DERMATOLOGY, St. John's Hospital, 49, Leicester-square, W.C.

THURSDAY, Feb. 14th.—5 P.M., Dr. J. E. M. Wigley: Lupus Erythematosus.

UNIVERSITY COLLEGE, London.

TUESDAY, Feb. 12th.—5.30 P.M., Mr. G. M. Morant, D.Sc.: The Rhodesian Man and his Relation to Other Types of Man.

HOSPITAL FOR SICK CHILDREN, Great Ormond-street, W.C.

THURSDAY, Feb. 14th.—4 P.M., Dr. Thursfield: The Prognosis of Nephritis.

ROYAL NORTHERN HOSPITAL, Holloway-road, N.

TUESDAY, Feb. 12th.—2.15 P.M., Dr. B. E. Schlesinger: Infant Feeding. 3.15 P.M., Mr. E. Wolff: Ocular Pain.

NATIONAL COUNCIL FOR MENTAL HYGIENE.

WEDNESDAY, Feb. 13th.—5 P.M. (at the Medical Society of London, Chandos-street, W.), Dr. Helen Boyle: Dangerous Ages: Middle Age.

LEEDS POST-GRADUATE COURSE ON CANCER.

WEDNESDAY, Feb. 13th.—3.30 P.M. (in the Leeds Medical School), Dr. A. Leitch: Recent Researches in Cancer.

ST. MARY'S HOSPITALS POST-GRADUATE LECTURE, Manchester.

FRIDAY, Feb. 15th.—4.30 P.M. (at the Whitworth-street West Branch), Dr. Ward: Cough, in Infancy and Childhood.

UNIVERSITY OF SHEFFIELD POST-GRADUATE CLINICS.

FRIDAY, Feb. 15th.—3.30 P.M., Mr. Yates: Surgical Cases.

Appointments.

FERGUSON, F. R., M.D. Manch., D.P.H., has been appointed Registrar to the National Hospital for Nervous Diseases, Queen-square, W.C.

GARTON, W., M.R.C.S., D.M.R. & E. Camb., Honorary Radiologist to the Kent and Canterbury Hospital.

SEVERN, A. G. M., M.D. Brux., L.R.C.P. Lond., M.R.C.S., D.P.H., Medical Officer of Health for Pontypridd.

TROUP, JAMES, M.B., Ch.B. Manch., F.R.C.S. Edin., Honorary Assistant Surgeon to the Royal Hampshire County Hospital, Winchester.

Certifying Surgeons under the Factory and Workshop Acts: ERSKINE, W. A., M.B., Ch.B. Edin. (Parbold, Lancaster); GANE, E. P. S., M.D. Durh. (Llansawel, Carmarthen); and MCCREA, R. A., M.B., B.Ch. (Chesterfield, Derby).

Vacancies.

For further information refer to the advertisement columns.

Bedford County Hospital.—Asst. H.S. At rate of £130.

Bootle Borough Hospital, Derby-road.—Sen. M.O. Also Two Jun. M.O.s. At rate of £150 and £125 respectively.

Bradford, Municipal General Hospital, St. Luke's.—H.P.'s and H.S.'s. Each at rate of £200.

Bradford, Royal Eye and Ear Hospital.—Jun. H.S. £120.

Brighton, French Convalescent Home, de Courcel-road, Kemp Town.—Hon. Visiting Physician.

Brighton, Royal Alexandra Hospital for Sick Children.—H.S. At rate of £100.

Cancer Hospital, Fulham-road.—Director of Electrical and Radio-Therapeutic Dept.

Cardiff, City Lodge Institution.—Third Asst. Res. M.O. At rate of £100.

Cardiff, University College of South Wales and Monmouthshire.—Lecturer and Demonstrator in Anatomy. £400.

Carlisle, Cumberland Infirmary.—H.P. Also Two H.S.'s. Each at rate of £155.

Charing Cross Hospital, W.C.—Hon. Clin. Asst. in X Ray Dept.

Chesterfield and North Derbyshire Royal Hospital.—Cas. H.S. At rate of £100.

Derby, Derbyshire Royal Infirmary.—Asst. H.S. and Cas. O. At rate of £150.

Derby, Royal Derby and Derbyshire Nursing and Sanitary Association.—Hon. Obstetric Physician to the Nightingale Nursing Home.

Dreadnought Hospital, Greenwich.—Phys. to Out-patients.

East Ham Memorial Hospital, Shrewsbury-road, E.—Hon. Asst. Physician.

Glasgow, Hawkhead Asylum, Crookston.—Jun. Asst. M.O. £27

Hospital for Sick Children, Gt. Ormond-street, W.C.—Cas. O. £400. Also Asthma Research Scholar. £300.
Ipswich County Borough.—Asst. M.O.H., &c. £600.
Jersey Mental Hospital.—Med. Supt. £650.
Liverpool, David Lewis Northern Hospital.—H.S. for Orthopædic, &c. At rate of £100.
L.C.C. Mental Hospital Service.—Eighth Asst. M.O. £300.
Lucknow University.—Professorship of Medicine and Physician to King George's Hospital. Rs.1200–50–1400 p.m.
Manchester, Ancoats Hospital.—H.P. At rate of £100. Also H.S. Orthopædic. £100
Manchester and Salford Hospital for Skin Diseases.—H.S. £100.
Manchester Hospital for Consumption, &c.—Hon. Asst. Phys.
Newcastle-upon-Tyne, Royal Victoria Infirmary.—Refraction Clerk to the Ophthalmic Dept. £150.
Newport, Mon., County Borough Mental Hospital.—Asst. M.O. £300.
Perth, James Murray's Royal Asylum.—Asst. Physician. £300.
Queen's Hospital for Children, Hackney-road, E.—Anæsthetist. £25. Also Res. M.O. £200.
Rampton State Institution for Mental Defectives, near Retford.—M.O. £536 10s.
Royal Free Hospital, Gray's Inn-road, W.C.—Eastman Dental Clinic Director.
Royal Northern Hospital, Holloway, N.—H.S. At rate of £70.
Ryde, Royal Isle of Wight County Hospital.—Vacancy on Hon. Medical Staff.
St. John's Hospital, Lewisham, S.E.—Hon. position in Psychological Medicine.
St. Paul's Hospital, Endell-street, W.C.—Hon. Cardiologist.
Smethwick County Borough.—Sen. Asst. M.O.H. £550.
Southampton, Royal South Hants and Southampton Hospital.—Sen. H.S. £175. H.P. £130. Jun. H.S. At rate of £130. Also Cas. O. At rate of £120.
Sudan Government.—Medical Officer. £E.852.
Surrey Administrative County of.—County M.O.H. £1800.
Swansea County Borough Infectious Diseases Hospital.—Res. M.O. £350.
Swansea Hospital.—H.S. £150.
Tunbridge Wells and Counties General Hospital.—H.S. £160.
Warwick County Mental Hospital, Hatton.—Jun. Asst. M.O. £350.
Watford, Herts, Peace Memorial Hospital.—Res. M.O. At rate of £150.
West Bromwich and District General Hospital.—H.S., H.P. Also Cas. H.S. Each at rate of £200.
West London Hospital, Hammersmith-road, W.—Hon. Obstetric Registrar.
Willesden General Hospital, Harlesden-road, N.W.—Hon. Ophthalmic Surgeon.
Woolwich and District War Memorial Hospital, Shooter's Hill, S.E.—Hon. Sen. Dental Surg., Hon. Dental Surg. Also Asst. Phys. to the Radiological Dept. £50.
York Dispensary.—Res. M.O. £150.

The Chief Inspector of Factories announces a vacant appointment for a Certifying Factory Surgeon at Hollingbourne (Kent).

Births, Marriages, and Deaths.

BIRTHS.

BEWLEY.—On Feb. 2nd, at Courtfield-road, South Kensington, the wife of Dr. Maurice Bewley, of a daughter.
HEFFERNAN.—On Jan. 26th, the wife of Major P. Heffernan, I.M.S. (retired), of a son.
MARSHALL.—On Jan. 30th, at a nursing home, Sheffield, the wife of Dr. G. G. Marshall, of a son.

DEATHS.

CLARK.—On Jan. 26th, George Clark, M.B., C.M., of Stockwell Park-road, S.W.
EDDISON.—On Jan. 27th, at Woodcroft, Cuckfield, Sussex, John Edwin Eddison, M.D., aged 86.
HAYNES.—On Jan. 28th, at Cathcart-road, South Kensington, Dr. James Robert Haynes, in his 86th year.
ILES.—On Jan. 31st, at Vivary Cottage, Taunton, Alfred Robert Iles, M.R.C.S. Eng., L.R.C.P. Lond., in his 77th year.
OGSTON.—On Feb. 1st, at Union-street, Aberdeen, Sir Alexander Ogston, K.C.V.O., M.D., LL.D.
OWEN.—On Jan. 31st, at 13, Rodney-street, Liverpool, of acute pneumonia, John Owen, M.D., F.R.C.P., aged 58, hon. physician, Liverpool Royal Infirmary.
SCORESBY-JACKSON.—On Jan. 30th, at 31, Thornsett-road, Anerley, S.E.20, Thomas Scoresby-Jackson, M.D., aged 79 years. Internment Monday, February 4th, in Elmers End Cemetery.
SHARP.—On Jan. 26th, at Charnwood House, Derby, John A. Sharp, M.R.C.S., L.R.C.P., consulting surgeon to the Derbyshire Royal Infirmary, in his 82nd year.

N.B.—A fee of 7s. 6d. is charged for the insertion of Notices of Births, Marriages, and Deaths.

INDEX TO "THE LANCET," VOL. II., 1928.

THE Index and Title-page to Vol. II., 1928, which was completed with the issue of Dec. 29th, is now ready. A copy will be sent gratis to subscribers on receipt of a post-card addressed to the Manager of THE LANCET, 1, Bedford-street, Strand, W.C. 2. Subscribers who have not already indicated their desire to receive Indexes regularly as published should do so now.

Notes, Comments, and Abstracts.

NIGHT VISION OF AVIATORS.

How much can a man see in the darkness of the night, and how long does it take him to become fully accommodated to the darkness? An answer to these questions is given by Surg. Lieut.-Col. P. J. E. Beyne and Surg.-Commander G. Worms, from the French Medico-Physiological Laboratory of Military Aviation, in the *Archives de Médecine Militaire* for last September (p. 231). They measured the vision of three aviators on a clear dark night in September, decided later, in a dark chamber, on the artificial illumination required to give the same vision—this they state as 0·0015 lux—and after many experiments declare the acuity of night vision to be 6/100 to 9/100 of what is considered normal by day. They found, too, that it lessens with age over 30, and that it does not reach its maximum until after 20–35 minutes in darkness. These figures are for Europeans; two natives of Tonkin both reached 10/100 in 25 minutes, an acuity greater than in any European examined. Night vision is, the investigators say, so important to aviators employed as night fliers or night bombers that they must be specially selected, attention being given both to the keenness of their night vision and the rapidity of its attainment. They further recommend that in night-flying aeroplanes the dials on the dashboard shall only be illuminated with red-purple lamps, the less to disturb the pilot's vision as he flies.

A MEDICAL RECLUSE.

A VERDICT of "death from natural causes" was returned at an inquest in Leeds on Feb. 1st on A. Clarence Foster, M.R.C.S., of Leeds, aged 84, son of a well-known Leeds doctor. He lived for many years with his elder brother Philip, an M.D. of St. Andrews, who died in August, 1927, and who left over £40,000. The two brothers occupied a house for over 70 years in Park-place, now the centre of a business area. Dr. Clarence Foster had not practised for many years and occupied the back rooms in the house, living the life of a recluse in a most frugal way, wearing tattered clothes and broken shoes. He was attended only by an old woman who occasionally went to clean his rooms, and who on getting no response to her call, informed the police. The doctor was found lying in a passage. He was taken to the infirmary and died a few hours later. He qualified M.R.C.S. Eng. in 1868 and was the author of "A Brief Historical Account of the Hôtel-Dieu, Paris, 1875," "Memorial Sonnets of Italy," and "Biographical Sketch of William Dunbar, Laureate to James IV.," 1891. Philip Foster published in THE LANCET, 1872, an account of a case of Cæsarean operation with recovery.

A BED-MAKING DEVICE FOR BEDRID PATIENTS.

THE difficulties of making the beds of helpless patients are not to be minimised. In a large hospital, with excellent equipment and a highly skilled nursing staff, these difficulties are not very apparent, but bed-making by attendants of only moderate skill may be a daily trial attended by much unnecessary discomfort and suffering. A device, known by the rather cumbersome title, "A Combined Bed Re-making and Transport Stretcher," has been invented and described by Dr. S. Orell (Acta Chir. Scand., 1928, lxiv., 24), and he suggests that it should be put into routine hospital use for bedridden patients. This may be unnecessary, but where skilled attention is not available the device might well be adopted. A frame, shaped so that it can be pushed over the bed, is surmounted by a stretcher which rotates in a longitudinal axis. The patient is rolled upon his side by a nurse, the frame is pushed over the bed, and the stretcher is rotated until it lies along his back. The patient is allowed to fall back on the stretcher, which is then rotated to the horizontal position, and the whole frame is wheeled away while the bed is re-made. The patient is deposited in bed again by reversing the process. There is no lifting, but only rolling or turning, and this makes the apparatus of great value for moving very heavy patients.

NEW PREPARATIONS.

We have received from Messrs. Cranbux, Ltd., of Westwick-street, Norwich, an assortment of flasks of *Odol* and tubes of *Odol paste*, for which the manufacturers claim merits as an antiseptic oral preparation. The preparation is so popular that no words are necessary to describe its properties as a pleasant cleanser and deodoriser in which certain antiseptic powers can be identified.

Syrup Pertussis (*Gabail*) is a product for which the Anglo-French Drug Company, Ltd., 238A, Gray's Inn-road, London, W.C., are the agents, and the claim is made that it is particularly effective in treating the paroxysms of whooping-cough. The formula is ext. valerian deodorised 2·4 g., amm. valerianate 2·4 g., strontium bromide 2·0 g., chloral hydrate 3·0 g., ext. droseræ liq. 2·0 g., syr. rubus idœus 60 c.cm., aq. destillata ad 125 c.cm., and the dosage is as follows: From 6 months to 1 year, two teaspoonfuls of the syrup mixed with a tablespoonful of sweetened water, a teaspoonful of which mixture is given every three hours; from 2 to 4 years, two teaspoonfuls of plain syrup in the morning, one at midday and one in the evening with meals; and from 4 to 12 years, one tablespoonful in the morning, midday, and evening, and an additional tablespoonful two hours after going to bed. The preparation is only a remedy for, or alleviation of, the coughing fits and vomiting, as is indicated by the presence in it of sundew and valerian, while strontium has a reputation for value in vomiting of nervous origin. The manufacturers do not claim that it is in any sense a cure for whooping-cough.

Benzyl Cinnamic Ester (*Dr. Jacobson's Solution*).—In THE LANCET of May 5th, 1928, is a note on the use of Benzyl Cinnamic Ester in Tuberculosis by Dr. H. Gainsborough, who describes the use by Dr. J. Jacobson of balsam of Peru as a remedy for certain forms of tuberculosis, especially of the skin. Jacobson, in 1919, suggested an analogy between tuberculosis and the disease due to pathogenic fungi, and the employment of the balsam is justified on account of its antiparasitic properties. French experience, according to Gainsborough, has given encouraging results in the treatment of pulmonary tuberculosis by benzyl cinnamic ester, but his observations were made mainly upon cases of external manifestations, although, in addition to reporting encouraging results in various cases of discharging sinus and lupus, he describes the relief also of typical cases of pulmonary, laryngeal, and renal tuberculosis with cystitis. The results which Jacobson obtained in treatment of tuberculosis of the skin at the Hôpital St. Louis have been confirmed by J. Darier, E. Jeanselme, M. Mitchitch, and other observers. The manufacturers and agents in Great Britain of Dr. Jacobson's solution are Messrs. Boots Pure Drug Company, Nottingham. The solution is supplied in 1 c.cm. vials, with the following description of Jacobson's method of administration in external and general tuberculosis:—

"(*a*) Cases of external tuberculosis unaccompanied by pulmonary or bucco-laryngeal tuberculosis are given an injection of 1 c.cm. of the solution.

"(*b*) Cases of external tuberculosis complicated by pulmonary or bucco-laryngeal tuberculosis are given the same doses as are recommended in the treatment of pulmonary tuberculosis.

"(*c*) In pulmonary and bucco-laryngeal tuberculosis the dose is 0·25 c.cm. of the solution. If, however, the general condition of the patient is good, 0·5 c.cm. can be administered. For children between eight and twelve years of age, half the adult dose is given."

The treatment of varicose veins by the injection of sclerosing solutions should be facilitated by the use of "*Hypoloid*" *Quinine and Urethane*, which has recently been issued by Messrs. Burroughs, Wellcome and Co. This solution consists of quinine hydrochloride 0·26 g. and urethane 0·13 g. in 2 c.cm. of sterile distilled water, issued in hermetically sealed glass containers ready for immediate use. Special literature on the successful use of this solution is supplied for the guidance of medical practitioners and may be obtained on request. The containers are issued in boxes of five.

Terpoflor Nasal Capsules.—Messrs. Wilcox, Jozeau and Co., 15, Great St. Andrew-street, London, W.C., are the agents of this preparation, which is intended for the disinfection of the respiratory passages. The formula is given as follows: cedrene 0·010, pinene 0·010, anethol 0·012, terpineol 0·004, camphoric aldehyde 0·010, cineol 0·008, methyl ortho-amido-benzoate 0·007, linalyl acetate 0·004, sesquiterpenes 0·035, extra paraffin oil 0·900. It is put up in the form of gelatin capsules, shaped like an ampoule. In application the end of a capsule is cut off and the contents squirted into the nostrils, the head being thrown well back. This may be done several times a day but only on the recommendation of a doctor, as the sensitiveness of the mucous membrane of the patient as well as other idiosyncrasies may vary. The preparation is indicated in affections of the upper respiratory tract, and is claimed rapidly to relieve congestion and the disagreeable feeling of a stopped-up nose in cases of cold in the head.

Dimol Pulverette and Dimol Mouth Wash (Dimol Laboratories, Ltd., 40, Ludgate-hill, London, E.C. (Agents: Sangers, 258, Euston-road).—These are two new preparations of Dimol, a well-known intestinal disinfectant which has already been referred to in these columns. Its chemical constitution is $C_6H_2(CH_3)_2(OCH_3)OH$, and it is free from toxicity. The Dimol Pulverette is prepared according to the formula dimethylomethoxyphenol gr. 1, acid arsen. gr. 1/180, ext. nuc. vom. gr. 1/16, and will be known as T; further, to safeguard against confusion with Pulverettes A (white) and B (yellow) the new pulverette is coloured pink. Its use is that of a nerve and general tonic combined with a non-toxic intestinal bactericide. The Pulverette T is put up in glass bottles and the dose is 2 or 3 three times a day, to be taken with a draught of water immediately after meals. The mouth wash, which is guaranteed to have the Rideal-Walker coefficient equal to 20 per cent. pure carbolic acid, is put up in bottles with a sprinkler top and cap and a few drops according to taste are shaken into half a tumbler of water. The strength may be increased when used as a gargle for relaxed throat or infected tonsils.

(*Continued at foot of next column.*)

THE KING'S ILLNESS.

OFFICIAL BULLETIN.

(*Continued from p. 270.*)

THE following official bulletin has been issued:—

MONDAY, FEB. 4TH.

The King continues to gain strength slowly, and was able to sit up on Saturday and Sunday for a short time. The question of ray therapy has been further considered. The period of the administration of ultra-violet rays has terminated, and it will now be possible to supplement this treatment by the addition of luminous rays. (Signed by Sir Stanley Hewett, Dr. Frank Howitt, Dr. Robert Stanton Woods, Sir Hugh Rigby, and Lord Dawson of Penn.)

(*Continued from previous column.*)

EMPLOYMENT FOR THE TUBERCULOUS.

THE experience of the New York Tuberculosis and Health Association in finding work for convalescent cases is now available in book form.[1] This original investigation was supported partly out of the funds of the Association and partly by a grant from the Laura Spelman Rockefeller Memorial. It was found inexpedient to list trades and occupations suitable for the tuberculous. Rather it is advantageous to make a list of the conditions that must be avoided as well as those which are favourable in any occupation: "There are no industries in which *all* jobs are suitable for the tuberculous, and on the other hand, there are only a few industries which have *no* jobs suitable for the tuberculous."

ROCKEFELLER FOUNDATIONS.

THE Laura Spelman Rockefeller Memorial, which was founded by Mr. Rockefeller in 1918 as a memorial to his wife, has recently been consolidated with the Rockefeller Foundation which title is retained for the new joint body. Dr. Vincent, president of the original Rockefeller Foundation, retains that title in the new organisation. The two foundations, whose joint assets now total over $264,000,000, will continue to function, but it is hoped with greater efficiency under the united administration. The General Education Board continues as a separate body.

Practitioner.—There seems to be no safe method of permanently curing superfluous hairs other than electrolysis in the hands of an expert, who need not necessarily be a medical person.

Erratum.—The dose of pyramidon given by Prof. H. Beyer (Berlin) for fever associated with nasal catarrh (THE LANCET, Jan. 26th, p. 198) should have been stated as 0·1 gramme, equivalent to grains 1·5.

[1] Employment of the Tuberculous, by Alice Campbell Klein and Grant Thorburn, M.D. National Tuberculosis Association, 370, Seventh-avenue, New York City. Price 50 cents.